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2010



Report of the
Commissioner of the
Environment and
Sustainable Development
to the House of Commons

FALL

The Commissioner's Perspective Main Points—Chapters 1 to 3 Appendix



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2010



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The Commissioner's Perspective Main Points—Chapters 1 to 3 Appendix

to the House of Commons





The Fall 2010 Report of the Commissioner of the Environment and Sustainable Development comprises The Commissioner's Perspective, Main Points—Chapters 1 to 3, an appendix, and four chapters. The main table of contents for the Report is found at the end of this publication.

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To the Honourable Speaker of the House of Commons:

On behalf of the Auditor General of Canada, I have the honour to transmit herewith this 2010 Fall Report to the House of Commons, which is to be laid before the House in accordance with subsection 23(5) of the *Auditor General Act*.

Scott Vaughan
Commissioner of the Environment
and Sustainable Development

To the reader:

I welcome your comments and suggestions on this Report and other issues related to the environment and sustainable development. I can be reached at the following address:

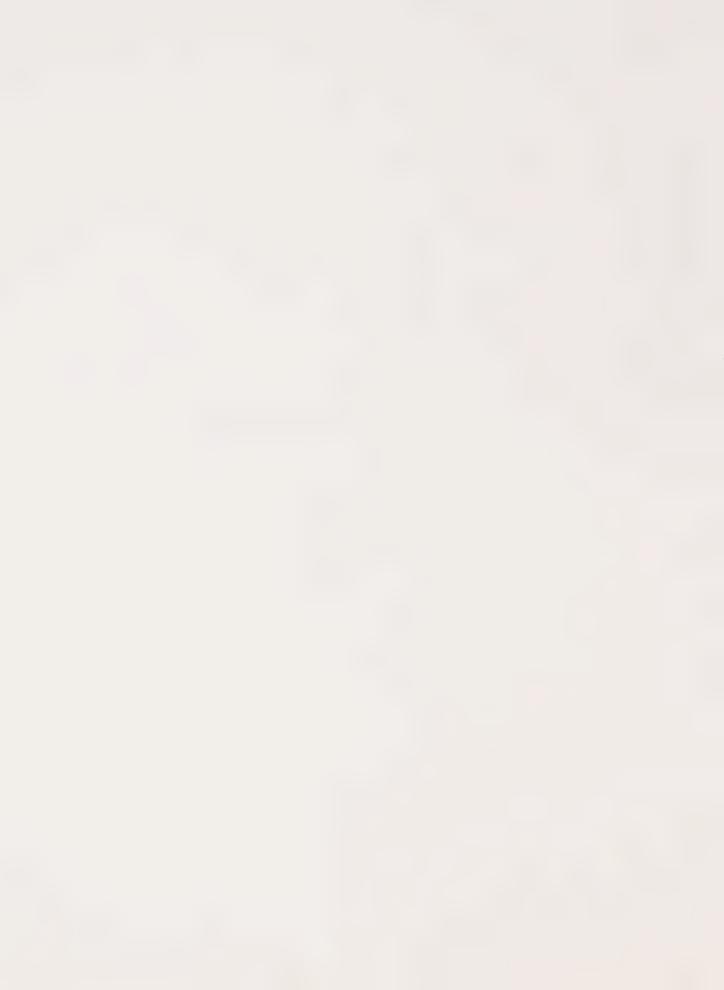
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The Commissioner's Perspective



The Commissioner's Perspective



Scott Vaughan
Commissioner of the Environment
and Sustainable Development

Introduction

Over the past two years, the world's attention has been largely focused on the turbulence in the global economy. At the same time, evidence of the rapid deterioration of the planet's environmental quality has continued to mount.

Two examples illustrate the worrying global environmental trends. First, in this, the International Year of Biodiversity, several scientific assessments have painted a bleak picture of our impacts on the animals and plants around us. Globally, we have failed to meet the 2010 United Nations target of slowing the rate of biodiversity loss. Second, the evidence about the speed and nature of human-caused climate change has grown steadily. Earlier this year, the US National Oceanic and Atmospheric Administration released a report—to which Canada contributed—that contained compelling evidence that climate change is well under way. The report reinforces the conclusions of numerous comprehensive scientific assessments, including that of the Intergovernmental Panel on Climate Change, which found that "Warming of the climate system is unequivocal. . . ."

My job, as Commissioner, is to provide objective reports to Parliament on how well the federal government is managing environmental and sustainable development issues such as these, and to provide members of Parliament with the information they need to hold the federal government to account.

This year, our report covers the following three topics in detail:

- How the federal government responds to oil spills from ships
- How it monitors the quantity and quality of our fresh water
- How it supports adaptation to climate change impacts

In addition, the report summarizes the environmental petitions that my Office received between 1 July 2009 and 30 June 2010.

Identifying common weaknesses

The chapters in this report point to some common weaknesses in how the federal government is managing environmental and sustainability issues. Specifically, this report identifies a pattern of unclear and uncoordinated actions. This has been aggravated by the overriding problem of a lack of sustained leadership.

The concerns we have raised in this report are hardly new. About 20 years ago, the federal government acknowledged that the impacts of climate change would pose significant, long-term challenges throughout Canada, from more frequent and severe storms in Atlantic Canada to changes in the amount of rain available to farmers. And today, the federal government still lacks an overarching federal strategy that identifies clear, concrete actions supported by coordination among federal departments.

Also 20 years ago, the federal government recognized the need for a national strategy to respond to the risks of spills from vessels transporting all kinds of hazardous and noxious substances. The volume of such substances—from industrial chemicals to solvents and pesticides—transported in Canadian waters continues to increase. Yet Canada still does not have a national plan to ensure the federal government is ready to respond to major incidents.

Environment Canada has been running the federal water quantity and water quality monitoring programs for about 40 years without knowing who—if anyone—is monitoring the quality of fresh water on federal lands. As a consequence, there are unacceptable gaps in the federal monitoring of fresh water—notably, that Environment Canada has water quality monitoring stations on only 12 of some 3,000 First Nation reserves. Federal leadership for water monitoring needs to be revisited, and Environment Canada needs to set out clearly how it will meet its responsibilities. In my view, this is long overdue.

Sustained leadership begins by knowing what the major environmental problems are, setting out a concrete plan with sufficient resources to tackle them consistently over time, and having the management systems needed to direct the work and monitor the achievement of those goals. Acquiring reliable environmental data and information is the first step in addressing the most pressing environmental priorities.

Solid, objective, and accessible information is essential to identify and respond to the quickening pace and complexity of environmental change, in Canada and globally. Managing Canada's environment

without scientifically sound environmental information is akin to trying to steer the country's economy without using indicators such as the gross domestic product, unemployment rates, and trade balances. As noted in previous reports to Parliament, critical gaps in the federal government's environmental information hinder both its capacity to inform Canadians about key environmental conditions, and its ability to know if the billions of dollars it spends each year on environmental protection are making a difference. This year, I was encouraged by the government's commitments to expand the suite of federal environmental indicators and to use those indicators to track federal programs intended to make progress on what matters most: improving Canada's environmental quality.

The chapters in this report describe additional gaps and document the consequences of those gaps for the federal government's ability to manage several critical environmental issues. For example, we found that the Canadian Coast Guard has unclear, incomplete, and unreliable data about oil spill responses. This means that the government cannot accurately determine the actual size of spills, how many spills required onsite responses, how many spills required the use of Canadian Coast Guard equipment, and the results of the cleanup efforts.

In her 2010 Spring Report, Chapter 4—Sustaining Development in the Northwest Territories, the Auditor General of Canada documented other gaps. She noted weaknesses in how the cumulative effects of project development are monitored. For example, the basic environmental baseline information needed to understand Canada's fragile northern ecosystems is incomplete. Northern communities, co-management boards, and the territorial government need to have a full picture of the environmental consequences of their economic development decisions.

The Standing Committee on Environment and Sustainable Development will soon begin its examination of environmental assessments, which are an important instrument for obtaining and using environmental information. The Committee is scheduled to complete its review of the Canadian Environmental Assessment Act in the spring of 2011. I hope that our recent chapters, including the audits of the implementation of the Act and of the Policy for the Management of Fish Habitat, will be useful during the Committee's review.

Planning for sustainable development

It has been almost 25 years since the United Nations World Commission on Environment and Development outlined the key aspects of sustainable development in its report, *Our Common Future*. The value of sustainable development lies in its ability to reform decision making that isolates the economic, environmental, and social dimensions. In August 2010, the Secretary General of the United Nations formed a senior panel to review and renew sustainable development, particularly given the accelerating threats posed by climate change. The panel's mandate underscores both the relevance of the idea of sustainable development, as well as the need to ensure it remains pertinent to new challenges.

In March 2010, my Office released a study on sustainable development. The study provides practical, concrete examples aimed at the federal government to help it move sustainable development from an idea to everyday practice (Exhibit 1).

${\bf Exhibit 1. Managing \ Sustainable \ Development: A \ Discussion \ Paper \ by \ the \ Commissioner \ of \ the \ Environment \ and \ Sustainable \ Development}$

In the spring of 2010, we released a discussion paper that outlines some of the core management practices used daily to advance sustainable development. We focused on the following two specific challenges:

- How can managers assess and compare the environmental, economic, and social effects of government policies, programs, and plans?
- How can they take into account effects that may last for decades?

The paper describes some useful concepts and tools for measuring and reporting on sustainable development. In addition, we note that federal frameworks and directives already exist to guide managers as they work toward their sustainable development objectives. I hope that the study, together with some outreach activities with senior officials and future work, will contribute to putting Canada on a sustainable footing.

In Canada, this year marked a significant milestone. After receiving repeated criticism from my predecessors, the government released a single, overarching federal sustainable development strategy. In my view, this is an excellent opportunity to correct a long-standing weakness in the federal government's approach to sustainable development, by providing a set of coherent objectives and a clear vision to help put Canada on a path toward long-term sustainability.

As required by the *Federal Sustainable Development Act*, we reviewed the draft strategy that was released on 15 March 2010. We noted several concerns, including its failure to explain how it would enhance

transparency and accountability of environmental decision making for Parliament. Instead, the draft strategy listed environmental protection goals and hundreds of existing environmental programs and strategies, grouped into four themes:

- · addressing climate change and air quality,
- maintaining water quality and availability,
- · protecting nature, and
- shrinking the government's environmental footprint.

These issues are clearly critical in tackling Canada's environmental challenges. However, the draft strategy did not identify how the four themes are linked or how they integrate economic and social factors. Moreover, the strategy did not explain how it would advance the long-term challenges of sustainability.

The final strategy was released on 6 October 2010. We noted that several adjustments were made in the final version, including

- added details on the plans for several key federal departments, notably the Department of Finance Canada and Industry Canada;
- pledges to strengthen strategic environmental assessments, to better assess the environmental implications of economic and social policies; and
- plans to expand the set of environmental indicators used to measure progress.

Using petitions to promote accountability

Chapter 4 summarizes the status of one of my other areas of responsibility: the federal environmental petitions process. The process, which was established in 1995 through amendments to the *Auditor General Act*, remains a unique and valuable way for Canadians to inform federal ministers directly about their environmental questions and related concerns about federal policies, programs, and actions to safeguard the environment. Since 1995, we have received more than 350 petitions, and each one has represented a significant statement of interest by individuals and groups. Over the years, petitioners have obtained information and, in some cases, a commitment to action.

My Office received 18 petitions last year; each raised substantive and timely issues. For example, petitioners asked questions about the federal government's management of salmon fisheries, the expansion

of the ski area in Jasper National Park and its potential impact on biodiversity, and the health risks associated with using sewage sludge on agricultural land.

The Act requires federal ministers to respond directly to each petitioner within 120 days—an important step in democratic accountability. This year, federal departments and agencies improved their performance in meeting the legislated deadlines.

Conclusion

The chapters in this report highlight several areas where, unfortunately, the federal government is not doing what it said it would do to protect the environment and move toward sustainable development. There is little in our findings to offset a discouraging picture, as most suggest underlying problems in how these federal programs are being managed. In short, the two fundamental problems we identified are a lack of effective and sustained leadership, especially when responsibilities are shared, and inadequate information.

I look forward to continuing to support Parliament in its work.

Main Points—Chapters 1 to 3





Oil Spills from Ships

Chapter 1

Main Points

What we examined

Under federal legislation and international agreements, the federal government is responsible for implementing measures to prevent, detect, prepare for, and respond to spills from ships in Canada's marine environment. Transport Canada sets guidelines and establishes the regulatory framework for preparedness and response to ship-source spills. Transport Canada also certifies private sector response organizations. The Canadian Coast Guard is the lead federal agency for responding to spills and is responsible for ensuring an appropriate response takes place. Environment Canada is the federal authority for providing environmental advice when a spill happens.

Between 2007 and 2009, a total of about 4,160 pollution incidents involving spills of oil, chemicals, or other pollutants into Canadian waters were reported to the Canadian Coast Guard. About 2,000 of these incidents involved vessels ranging from pleasure craft and fishing boats to barges, cargo vessels, and tankers.

We examined how the federal government has managed spills of oil and chemicals from ships in Canada's Arctic, Pacific, and Atlantic Ocean waters and the Gulf of the St. Lawrence. Specifically, we looked at whether Transport Canada, the Canadian Coast Guard, and Environment Canada are prepared to respond to such spills. We also looked at how the three organizations monitor and assess responses to these spills. We focused on oil and chemical spills from ships and did not address other land-based and marine-based sources of pollutants.

Audit work for this chapter was substantially completed on 30 June 2010.

Why it's important

Bordered by three major oceans and home to the world's longest coastline, Canada is the steward of ocean regions that cover more than 7.1 million km², an area equivalent to about 78 percent of its landmass. Canada's ocean regions are a vital part of the country's economy, providing employment and a way of life for about seven million people. Oceans support activities such as aquaculture

and fisheries, tourism and recreation, shipping and transportation, offshore oil and gas development, and offshore mining.

Oceans also provide habitat for a variety of wildlife, including numerous species of fish, shellfish, seabirds, and mammals, all of which contribute to the economic, social, and environmental well-being of Canadians. Ship-source spills of pollutants such as oil and other hazardous substances are one of several sources of marine pollution.

What we found

- While Transport Canada and the Canadian Coast Guard have carried out risk assessments related to oil spills from ships, they have not used a consistent or systematic approach, nor are there formal processes for ensuring that risks are reassessed on an ongoing basis. As a result, knowledge of risks in Canada to spills from ships, which is important for effective emergency planning, is not complete or up to date. Furthermore, the emergency management plans of the Canadian Coast Guard and Environment Canada—both important players in the federal oil spill response system—are not all up to date.
- Transport Canada reviews private sector certified response organizations to verify that they remain ready to respond to spills. This includes ensuring that these organizations have up-to-date emergency management plans, conduct adequate training and exercises, and have the equipment necessary to respond to ship-source oil spills up to 10,000 tonnes. Similar procedures are not in place to verify the Canadian Coast Guard's readiness. In other words, there is currently no process for providing assurance that the federal component of the oil spill response system is ready to respond effectively.
- The Coast Guard has not conducted a comprehensive assessment of its response capacity since 2000. Given the lack of any recent capacity analysis and current information on risks, the Coast Guard is unable to determine how much oil spill response equipment it should have and whether it has appropriate capacity to address the risks.
- The results of the Coast Guard's response efforts—which range from identifying the source of pollution to full cleanup—are poorly documented. There are also limitations with the Coast Guard's system for tracking oil spills and other marine pollution incidents. These gaps affect its ability to conduct reliable analysis of trends in spills and know how well it is achieving its objectives of minimizing the environmental, economic, and public safety impacts of marine pollution incidents.

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• A public review panel recommended 20 years ago that the federal government establish a national regime to deal with ship-source chemical spills. Such a regime is not yet in place, and none is expected before 2013. In the meantime, Canada lacks a formal framework with clearly defined roles and responsibilities for responding to chemical spills.

The entities have responded. The entities agree with all of our recommendations. Their detailed responses follow the recommendations throughout the chapter.



Monitoring Water Resources

Chapter 2 M

Main Points

What we examined

Canada is home to roughly seven percent of the Earth's renewable fresh water. From the Gander River in the east to Campbell River in the west, to the Mackenzie River in the north, and thousands of other rivers and lakes in between, water defines our landscape. Environment Canada maintains two programs to monitor the long-term quality and quantity of surface fresh water resources in Canada.

The Department's Fresh Water Quality Monitoring program monitors long-term water quality at 456 sites across the country to assess and report on the status of Canada's rivers and lakes and on changes to the health of aquatic ecosystems. The data and information produced by the program are intended to serve various water management activities and needs, such as establishing baseline conditions, determining trends in aquatic ecosystem health, and detecting emerging water quality issues. The data and information provided by the program are also intended to inform regulatory activities.

The Department's National Hydrometric Program monitors the quantity of surface water resources at 2,107 sites across the country and is intended to provide Canadians with the data, information, and knowledge they need to make water management decisions. Water quantity data and information are used to determine how much water is available for various uses such as irrigation and industrial and domestic uses, to make trans-boundary water allocation decisions, and for flood forecasting.

We examined how Environment Canada manages each of these programs and how it measures and reports on the programs' performance.

Audit work for this chapter was substantially completed on 30 June 2010.

Why it's important

According to recent public opinion polls, Canadians regard fresh water as the country's most important natural resource, more important than oil and gas and forestry. Fresh water is a critical factor in most economic and industrial activities, from the production of goods and

services, including food, to recreation and tourism. Canadians count on fresh water for just about every aspect of their lives. Water is also essential to the health of ecosystems and, in turn, to the well-being of Canadians.

Understanding the status and long-term trends in the quality and quantity of the country's fresh water resources is of vital importance to Canada's future prosperity.

What we found

- Environment Canada is not adequately monitoring the quality and quantity of Canada's surface water resources. Although it has run the Fresh Water Quality Monitoring program and the National Hydrometric Program since the 1970s, the Department has not fully defined the extent of its water monitoring responsibilities, particularly on federal lands such as First Nations reserves, Canadian Forces bases, national parks, and national wildlife areas. The Department is not monitoring water quality on the majority of federal lands and does not know whether other federal departments are doing so. As a result, there may be vast areas under federal jurisdiction where fresh water quality and quantity conditions are not being monitored.
- Environment Canada has not located its monitoring stations based on an assessment of risks to water quality and quantity. As a result, it may not be focussing its monitoring efforts on the activities and substances that pose the greatest risks.
- Both of the water monitoring programs we audited developed quality control procedures intended to ensure that the data they disseminate is fit for their intended uses. The National Hydrometric Program has consistently applied its quality control procedures to validate the data from the stations we examined. The Fresh Water Quality Monitoring program has not. As a result, Environment Canada cannot assure users that its water quality data is fit for their intended uses.
- The Department has not established many of the essential management practices needed to plan, implement, assess, and improve its long-term monitoring programs. It has not taken the initial steps to clearly establish the extent of each program's monitoring responsibilities, risk-based priorities, and client needs. As a consequence, the Department has no objective basis on which to identify opportunities for improvement or take corrective actions to improve these programs.

The Department has responded. The Department agrees with all of our recommendations. Its detailed responses follow the recommendations throughout the chapter.



Adapting to Climate Impacts

Chapter 3

Main Points

What we examined

Government reports have demonstrated that climate change affects all regions of the country and a wide range of economic sectors. These impacts and the need to adapt to them touch on virtually all federal government portfolios, with significant implications for policies and programs related to Canadians' health and the country's industry, infrastructure, and ecosystems. The federal government is well positioned to help Canadians reduce their exposure to risks from climate change by providing them with information on impacts and adaptive measures.

We examined five key federal departments whose mandates are affected significantly by climate change—Environment Canada, Natural Resources Canada, Health Canada, Indian and Northern Affairs Canada, and Fisheries and Oceans Canada. We looked at whether the departments are identifying and assessing the risks posed by climate change in their areas of responsibility. We also looked at whether they are taking steps to adapt to the risks by considering them in their planning and decision making.

We looked at four climate change adaptation programs in these departments to determine whether they have collected and disseminated information in a usable way to those who need the information—for example, other federal departments, provinces and territories, Aboriginal communities, municipalities, industry sectors, non-governmental organizations, and academics.

Audit work for this chapter was substantially completed on 8 June 2010.

Why it's important

The health of Canadians and Canada's natural environment, communities, and economy are vulnerable to the impacts of a changing climate. Some of these impacts are already occurring from coast to coast. They are most evident in Canada's North where, for example, the thawing of permafrost as a result of temperature increases is affecting the stability of roads, buildings, pipelines, and other infrastructure.

Adapting to actual or expected changes in climate involves adjusting our decisions, activities, and thinking. These adjustments are essential both to minimize adverse effects and to take advantage of new and beneficial opportunities. The government acknowledges that climate change is inevitable and that we must adapt to its impacts in order to reduce their severity.

What we found

- The government has not established clear priorities for addressing the need to adapt to a changing climate. Although the government committed in 2007 to produce a federal adaptation policy to assist it in establishing priorities for future action, there is still no federal adaptation policy, strategy, or action plan in place. Departments therefore lack the necessary central direction for prioritizing and coordinating their efforts to develop more effective and efficient ways of managing climate change risks.
- Overall, the departments we examined have not taken concrete
 actions to adapt to the impacts of a changing climate. With few
 exceptions, they have yet to adjust or develop policies and practices to
 better respond to the risks. However, Fisheries and Oceans Canada,
 Natural Resources Canada, Health Canada, and Environment
 Canada have taken the first steps of risk management by completing
 assessments of the risks to their mandate areas from climate change,
 and they have prioritized the risks. Indian and Northern Affairs
 Canada has initiated but not yet completed a department-wide
 assessment of climate change risks it must manage.
- The four programs we examined have shared information on climate impacts and adaptation in a manner that responds to the needs of their specific clients, stakeholders, and partners. However, the programs cannot meet the increasing demand for information. Funding for adaptation programs under the Clean Air Agenda is scheduled to end in March 2011, and there is no plan in place to address ongoing needs after that date.

The departments have responded. The departments agree with all of the recommendations addressed to them. Their detailed responses follow the recommendations throughout the chapter.



Appendix



Appendix Auditor General Act—Excerpts

An Act respecting the Office of the Auditor General of Canada and sustainable development monitoring and reporting

INTERPRETATION

Definitions

2. In this Act.

"appropriate Minister" "appropriate Minister" has the meaning assigned by section 2 of the Financial Administration Act:

"category I department"

"category I department" means

- (a) any department named in Schedule I to the Financial Administration Act;
- (b) any department in respect of which a direction has been made under subsection 11(3) of the Federal Sustainable Development Act; and
- (c) any agency set out in the schedule to the Federal Sustainable Development Act.

"Commissioner"

"Commissioner" means the Commissioner of the Environment and Sustainable Development appointed under subsection 15.1(1);

"sustainable development"

"sustainable development" means development that meets the needs of the present without compromising the ability of future generations to meet their own needs;

POWERS AND DUTIES

Examination

5. The Auditor General is the auditor of the accounts of Canada, including those relating to the Consolidated Revenue Fund and as such shall make such examinations and inquiries as he considers necessary to enable him to report as required by this Act.

Annual and additional reports to the House of Commons

- 7. (1) The Auditor General shall report annually to the House of Commons and may make, in addition to any special report made under subsection 8(1) or 19(2) and the Commissioner's report under subsection 23(2), not more than three additional reports in any year to the House of Commons
 - (a) on the work of his office; and,
 - (b) on whether, in carrying on the work of his office, he received all the information and explanations he required.

Idem

- (2) Each report of the Auditor General under subsection (1) shall call attention to anything that he considers to be of significance and of a nature that should be brought to the attention of the House of Commons, including any cases in which he has observed that
 - (a) accounts have not been faithfully and properly maintained or public money has not been fully accounted for or paid, where so required by law, into the Consolidated Revenue Fund;
 - (b) essential records have not been maintained or the rules and procedures applied have been insufficient to safeguard and control public property, to secure an effective check on the assessment, collection and proper allocation of the revenue and to ensure that expenditures have been made only as authorized;
 - (c) money has been expended other than for purposes for which it was appropriated by Parliament;
 - (d) money has been expended without due regard to economy or efficiency;
 - (e) satisfactory procedures have not been established to measure and report the effectiveness of programs, where such procedures could appropriately and reasonably be implemented; or
 - (f) money has been expended without due regard to the environmental effects of those expenditures in the context of sustainable development.

STAFF OF THE AUDITOR GENERAL

Appointment of Commissioner

15.1 (1) The Auditor General shall, in accordance with the *Public Service Employment* Act, appoint a senior officer to be called the Commissioner of the Environment and Sustainable Development who shall report directly to the Auditor General.

Commissioner's duties

(2) The Commissioner shall assist the Auditor General in performing the duties of the Auditor General set out in this Act that relate to the environment and sustainable development.

SUSTAINABLE DEVELOPMENT

Purpose

- 21.1 In addition to carrying out the functions referred to in subsections 23(3) and (4), the purpose of the Commissioner is to provide sustainable development monitoring and reporting on the progress of category I departments towards sustainable development, which is a continually evolving concept based on the integration of social, economic and environmental concerns, and which may be achieved by, among other things,
 - (a) the integration of the environment and the economy;
 - (b) protecting the health of Canadians;
 - (c) protecting ecosystems;
 - (d) meeting international obligations;

- (e) promoting equity;
- (f) an integrated approach to planning and making decisions that takes into account the environmental and natural resource costs of different economic options and the economic costs of different environmental and natural resource options;
- (g) preventing pollution; and
- (h) respect for nature and the needs of future generations.

Petitions received

22. (1) Where the Auditor General receives a petition in writing from a resident of Canada about an environmental matter in the context of sustainable development that is the responsibility of a category I department, the Auditor General shall make a record of the petition and forward the petition within fifteen days after the day on which it is received to the appropriate Minister for the department.

Acknowledgement to be sent

(2) Within fifteen days after the day on which the Minister receives the petition from the Auditor General, the Minister shall send to the person who made the petition an acknowledgement of receipt of the petition and shall send a copy of the acknowledgement to the Auditor General.

Minister to respond

- (3) The Minister shall consider the petition and send to the person who made it a reply that responds to it, and shall send a copy of the reply to the Auditor General, within
 - (a) one hundred and twenty days after the day on which the Minister receives the petition from the Auditor General; or
 - (b) any longer time, where the Minister personally, within those one hundred and twenty days, notifies the person who made the petition that it is not possible to reply within those one hundred and twenty days and sends a copy of that notification to the Auditor General.

Multiple petitioners

(4) Where the petition is from more than one person, it is sufficient for the Minister to send the acknowledgement and reply, and the notification, if any, to one or more of the petitioners rather than to all of them.

Duty to monitor

- 23. (1) The Commissioner shall make any examinations and inquiries that the Commissioner considers necessary in order to monitor
 - (a) the extent to which category I departments have contributed to meeting the targets set out in the Federal Sustainable Development Strategy and have met the objectives, and implemented the plans, set out in their own sustainable development strategies laid before the House of Commons under section 11 of the Federal Sustainable Development Act; and
 - (b) the replies by Ministers required by subsection 22(3).

Commissioner's report

- (2) The Commissioner shall, on behalf of the Auditor General, report annually to the House of Commons concerning anything that the Commissioner considers should be brought to the attention of that House in relation to environmental and other aspects of sustainable development, including
 - (a) the extent to which category I departments have contributed to meeting the targets set out in the Federal Sustainable Development Strategy and have met the objectives, and implemented the plans, set out in their own sustainable development strategies laid before that House under section 11 of the Federal Sustainable Development Act;
 - (b) the number of petitions recorded as required by subsection 22(1), the subject-matter of the petitions and their status; and
 - (c) the exercising of the authority of the Governor in Council under subsections 11(3) and (4) of the Federal Sustainable Development Act.

Duty to examine

(3) The Commissioner shall examine the report required under subsection 7(2) of the Federal Sustainable Development Act in order to assess the fairness of the information contained in the report with respect to the progress of the federal government in implementing the Federal Sustainable Development Strategy and meeting its targets.

Duty to report

(4) The Commissioner shall include in the report referred to in subsection (2) the results of any assessment conducted under subsection (3) since the last report was laid before the House of Commons under subsection (5).

Submission and tabling of report

(5) The report required by subsection (2) shall be submitted to the Speaker of the House of Commons and shall be laid before that House by the Speaker on any of the next 15 days on which that House is sitting after the Speaker receives it.

Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—Fall 2010

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Report of the
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to the House of Commons

FALL

Chapter 1
Oil Spills from Ships



Office of the Auditor General of Canada



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Chapter 1Oil Spills from Ships



Office of the Auditor General of Canada



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Oil Spills from Ships

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Oil Spills from Ships

Main Points

What we examined

Under federal legislation and international agreements, the federal government is responsible for implementing measures to prevent, detect, prepare for, and respond to spills from ships in Canada's marine environment. Transport Canada sets guidelines and establishes the regulatory framework for preparedness and response to ship-source spills. Transport Canada also certifies private sector response organizations. The Canadian Coast Guard is the lead federal agency for responding to spills and is responsible for ensuring an appropriate response takes place. Environment Canada is the federal authority for providing environmental advice when a spill happens.

Between 2007 and 2009, a total of about 4,160 pollution incidents involving spills of oil, chemicals, or other pollutants into Canadian waters were reported to the Canadian Coast Guard. About 2,000 of these incidents involved vessels ranging from pleasure craft and fishing boats to barges, cargo vessels, and tankers.

We examined how the federal government has managed spills of oil and chemicals from ships in Canada's Arctic, Pacific, and Atlantic Ocean waters and the Gulf of the St. Lawrence. Specifically, we looked at whether Transport Canada, the Canadian Coast Guard, and Environment Canada are prepared to respond to such spills. We also looked at how the three organizations monitor and assess responses to these spills. We focused on oil and chemical spills from ships and did not address other land-based and marine-based sources of pollutants.

Audit work for this chapter was substantially completed on 30 June 2010.

Why it's important

Bordered by three major oceans and home to the world's longest coastline, Canada is the steward of ocean regions that cover more than 7.1 million km², an area equivalent to about 78 percent of its landmass. Canada's ocean regions are a vital part of the country's economy, providing employment and a way of life for about seven million people. Oceans support activities such as aquaculture

and fisheries, tourism and recreation, shipping and transportation, offshore oil and gas development, and offshore mining.

Oceans also provide habitat for a variety of wildlife, including numerous species of fish, shellfish, seabirds, and mammals, all of which contribute to the economic, social, and environmental well-being of Canadians. Ship-source spills of pollutants such as oil and other hazardous substances are one of several sources of marine pollution.

What we found

- While Transport Canada and the Canadian Coast Guard have carried out risk assessments related to oil spills from ships, they have not used a consistent or systematic approach, nor are there formal processes for ensuring that risks are reassessed on an ongoing basis. As a result, knowledge of risks in Canada to spills from ships, which is important for effective emergency planning, is not complete or up to date. Furthermore, the emergency management plans of the Canadian Coast Guard and Environment Canada—both important players in the federal oil spill response system—are not all up to date.
- Transport Canada reviews private sector certified response organizations to verify that they remain ready to respond to spills. This includes ensuring that these organizations have up-to-date emergency management plans, conduct adequate training and exercises, and have the equipment necessary to respond to ship-source oil spills up to 10,000 tonnes. Similar procedures are not in place to verify the Canadian Coast Guard's readiness. In other words, there is currently no process for providing assurance that the federal component of the oil spill response system is ready to respond effectively.
- The Coast Guard has not conducted a comprehensive assessment of its response capacity since 2000. Given the lack of any recent capacity analysis and current information on risks, the Coast Guard is unable to determine how much oil spill response equipment it should have and whether it has appropriate capacity to address the risks.
- The results of the Coast Guard's response efforts—which range from identifying the source of pollution to full cleanup—are poorly documented. There are also limitations with the Coast Guard's system for tracking oil spills and other marine pollution incidents. These gaps affect its ability to conduct reliable analysis of trends in spills and know how well it is achieving its objectives of minimizing the environmental, economic, and public safety impacts of marine pollution incidents.

• A public review panel recommended 20 years ago that the federal government establish a national regime to deal with ship-source chemical spills. Such a regime is not yet in place, and none is expected before 2013. In the meantime, Canada lacks a formal framework with clearly defined roles and responsibilities for responding to chemical spills.

The entities have responded. The entities agree with all of our recommendations. Their detailed responses follow the recommendations throughout the chapter.

Introduction

Impacts of oil and chemical spills

- 1.1 Oil spills. Marine ship-source oil spills can have significant impacts on both the environment and local coastal communities. Spills can occur as a result of accidents or operations, or from the intentional discharge of oily wastes into the water. Ships and vessels involved in spills can include oil tankers, bulk carriers, barges, fishing vessels, and pleasure craft.
- Spills can range from large quantities of oil from oil tankers to smaller accidental discharges of oil and fuel from smaller craft in marinas. Some of the most serious oil spills result from accidents involving oil tankers, including the Prestige (63,000 tonnes of heavy fuel oil; Spain, 2002), the Erika (20,000 tonnes of heavy fuel oil; France, 1999), and the Exxon Valdez (41,000 tonnes of crude oil; Alaska, 1989). Although Canada has not encountered spills of the magnitude of the Exxon Valdez, it has experienced ship-source oil spills in the past: the Arrow (10,000 tonnes of bunker fuel; Nova Scotia, 1970), the Golden Robin (400 tonnes of bunker fuel; Baie-des-Chaleurs, Quebec, 1974), and the Kurdistan (8,000 tonnes of bunker fuel; Cabot Strait between Cape Breton Island and Newfoundland, 1979).
- Ship-source oil spills can have immediate and long-term impacts on
 - marine life (for example, seabirds and whales) and habitat (for example, wetlands and marshes);
 - recreational activities such as boating, swimming, and fishing;
 - · economic activities such as tourism, commercial fishing, and aquaculture; and
 - human welfare such as public anxiety over lost livelihoods.
- Within Canada, maritime shipping is an important part of the economy, and increases in vessel traffic may bring a greater risk of oil spills that could damage the marine environment. Between 2007 and 2009, a total of about 4,160 pollution incidents from across Canada were reported to the Canadian Coast Guard, of which about 1,580 involved oil spills from ships. Although Canada has not experienced spills of the magnitude of the Exxon Valdez, the size of the spill is not the only important factor in determining the significance of a spill; where a spill occurs is also important.

Tonne—The equivalent of about 1,100 litres or

Arctic Council— A high-level intergovernmental forum that provides a means for promoting cooperation, coordination, and interaction among the Arctic states on common Arctic issues—in particular, issues of sustainable development and environmental protection in the Arctic. Member states are Canada, Denmark (including Greenland and the Faroe Islands). Finland, Iceland, Norway, the Russian Federation. Sweden, and the United States of America

Hazardous and noxious substance—
According to the Protocol on Preparedness,
Response and Co-operation to Pollution
Incidents by Hazardous and Noxious
Substances, a substance other than oil that, if
introduced into the marine environment, is likely
to create hazards to human health, to harm
inving resources and marine life, to damage
amenities, or to interfere with other legitimate
uses of the sea

For example, smaller-scale spills can have important impacts, especially in ecologically sensitive areas.

- 1.5 Canada's ocean regions total more than 7.1 million square kilometres—an area equivalent to about 78 percent of Canada's landmass. With the world's longest coastline of about 244,000 kilometres, Canada's coastal waters are ecologically diverse and rich in marine resources, and include numerous species of fish, shellfish, seabirds, and mammals, which contribute to our economic, social, and environmental well-being. The consequences of a shipsource oil spill in some of these waters could be extremely serious. A good example is the fragile Arctic, where extreme cold and ice conditions, coupled with geographic isolation, may impede recovery from an oil spill for many years.
- The Arctic Council in 2009 published the Arctic Marine Shipping Assessment. The assessment highlighted that the Northwest Passage is not expected to become a viable transarctic route through 2020. Nonetheless, regional shipping within the Canadian Arctic (conducted for community resupply, natural resource development, or tourism) is anticipated to increase. The assessment noted that there is a general lack of marine infrastructure in the Arctic, including a lack of hydrographic, oceanographic, and meteorological data critical to safe navigation, and that, except in limited areas, there is a lack of emergency response capacity for pollution mitigation. The assessment also noted that there are serious limitations to communications and few systems to monitor or control the movement of ships. The assessment concluded that these deficiencies, coupled with the vastness and harshness of the environment, make conducting emergency responses significantly more difficult in the Arctic.
- 1.7 Chemical spills. Certain chemicals, referred to as hazardous and noxious substances, are also transported by ship within Canada. Similar to oil, these substances spilling into the marine environment can have significant impacts on both the environment and local coastal communities. Between 2007 and 2009, about 30 pollution incidents involving chemical spills from vessels were reported to the Canadian Coast Guard. Although spills involving hazardous and noxious substances are much less frequent than oil spills, according to Transport Canada, the volume of hazardous and noxious substances transported in Canadian waters poses a risk that an incident involving these substances could occur. Because many of the properties of hazardous and noxious substances are different from oil, response plans designed for oil spills are ineffective for these substances.

Roles and responsibilities

- Canada has a marine pollution preparedness and response system for ships that contains two equally important components: Canada's Marine Oil Spill Preparedness and Response Regime (which is regulated by Transport Canada), and the Government of Canada's operational response capacity, contained within the Canadian Coast Guard (part of Fisheries and Oceans Canada).
- Canada's Marine Oil Spill Preparedness and Response Regime. In 1989, in response to growing public concern following the Exxon Valdez spill, the federal government established the Public Review Panel on Tanker Safety and Marine Spills Response Capability. Following the Panel's report in 1990 (Protecting our Waters: Final Report, known as the Brander-Smith Report), Canada's Marine Oil Spill Preparedness and Response Regime was established in 1995.
- 1.10 The Regime, which deals with ship-source oil spills, was developed in partnership with industry and is based on the principle that polluters are responsible for paying for damages caused by a spill (known as the polluter pays principle). Industry plays a key role in the regime. South of 60° N latitude, industry funds four private response organizations that maintain the capacity to respond to spills of up to 10,000 tonnes. This capacity can be bolstered by transferring (also referred to as cascading) resources from across the country as needed. Response organizations are certified by Transport Canada to ensure that the capacity to respond to different sizes of ship-source oil spills is maintained (Exhibit 1.1). Approximately 4,000 arrangements are currently in place between ships and one or more of the four certified response organizations in Canada. There are no certified response organizations north of 60° N latitude (Exhibit 1.2).

Exhibit 1.1 Response time requirements for certified response organizations

Quantity of oil spill	Response time requirements		
150 tonnes	6 hours (for equipment to be deployed on-site)		
1,000 tonnes	12 hours (for equipment to be deployed on-site)		
2,500 tonnes	18 hours (for equipment to be on-site)		
10,000 tonnes	72 hours (for equipment to be on-site)		

Source: Marine Oil Spill Preparedness and Response Regime Report to Parliament, Transport Canada,

Exhibit 1.2 Areas covered by certified response organizations



Source: Adapted from Marine Oil Spill Preparedness and Response Regime Report to Parliament, Transport Canada, 2004–2006

- 1.11 Transport Canada. Transport Canada is the lead regulatory agency for the Regime. The Department sets guidelines and establishes the regulatory framework for preparedness and response to ship-source oil spills and is responsible for ensuring that the appropriate level of preparedness is available to combat these spills in waters under Canadian jurisdiction. Transport Canada also certifies the private sector response organizations.
- Apart from the Regime, the Department is also responsible for setting guidelines and establishing the regulatory framework for ship-source spills of hazardous and noxious substances into Canada's marine environment. Transport Canada is also responsible for carrying out activities related to the prevention of pollution, such as inspections of Canadian and foreign ships in Canadian waters for compliance with environmental regulations and standards. This includes the inspection of all foreign tankers at first call and every 12 months thereafter as part of the Canadian tanker inspection program as per recommendations from the 1990 Brander-Smith Report. As well, the Department is the lead agency for decisions related to ships needing assistance and

requesting a place of refuge (a place where a vessel in need of assistance can be taken for safety and to minimize the impact on the environment).

- 1.13 Canadian Coast Guard. Fisheries and Oceans Canada's Canadian Coast Guard is the lead federal agency responsible for ensuring an appropriate response to ship-source spills in Canada. The objectives of the Coast Guard's Environmental Response Program are to minimize the environmental, economic, and public safety impacts of marine pollution incidents, including ship-source oil and chemical spills. The Coast Guard fulfills this role by acting as either
 - the federal monitoring officer, by monitoring the polluter's response to spills (in this case, the polluter must ensure that damage to Canada's marine environment is minimized and must respond directly or with the assistance of a certified response organization); or
 - the on-scene commander, by managing the response to spills. If the polluter is unknown or is unwilling or unable to take on all or some response obligations; declines to continue the management of the response; or responds in a matter that, in the opinion of the Coast Guard, is inadequate, the Coast Guard assumes the management of the pollution incident. This can include the Coast Guard taking cleanup measures itself, or directing a vessel or any person to take actions the Coast Guard considers necessary to repair, remedy, minimize, or prevent pollution damage.
- 1.14 The Coast Guard may also act as a resource agency. For example, organizations such as provincial government ministries and offshore drilling operators may call on the Coast Guard to obtain their advice and/or equipment in the case of an oil spill.
- 1.15 To help fulfill its roles as on-scene commander and resource agency, the Canadian Coast Guard maintains depots of equipment at various locations across the country (Exhibit 1.3). We note that the Coast Guard's preparedness costs are not directly paid by industry but rather are supported by the Government of Canada and mandated under the Oceans Act and the Canada Shipping Act, 2001. The Coast Guard can, however, recover costs incurred during an oil spill response operation from the owner of the ship responsible for the spill, Canada's Ship-source Oil Pollution Fund, or the International Oil Pollution Compensation Fund.
- **1.16** Environment Canada. Environment Canada is the federal authority for providing environmental advice during a ship-source oil or chemical spill. The Department is responsible for establishing and

coordinating multi-stakeholder Regional Environmental Emergencies Teams (REET) composed of representatives from the federal, provincial, and territorial governments; industry; and other organizations in a region, such as Aboriginal groups. During a marine pollution incident, Environment Canada would support those involved by providing expert environmental advice directly, or through the Regional Environmental Emergencies Teams, particularly with respect to environmental priorities, resources at risk, and the most appropriate cleanup countermeasures. It would also provide advice on ways to reduce the impact on the environment, modelling of spill trajectories, marine weather warnings and forecasts, and the location of wildlife and sensitive ecosystems.

Exhibit 1.3 Location of Canadian Coast Guard equipment depots



Source: Adapted from Canadian Coast Guard documentation

Managing ship-source oil and chemical spills

- Managing ship-source oil and chemical spills can be divided into the following phases: prevention, detection, preparedness, and response. Each phase is briefly described below.
- Prevention. Pollution prevention includes any activity geared toward eliminating or reducing ship-source oil and chemical spills, which includes the enactment and enforcement of relevant legislation and regulations. Regulations under the Canada Shipping Act, 2001 and the Arctic Waters Pollution Prevention Act set discharge limits for a variety of marine pollutants and require Canadian and foreign ships in Canadian waters to meet specified construction, equipment, reporting, and operational standards in order to prevent and control pollution. Likewise, the Migratory Birds Convention Act, 1994 prohibits discharges from vessels into waters frequented by migratory birds, while the Fisheries Act prohibits the deposit of deleterious or harmful substances into waters frequented by fish. Transport Canada and Environment Canada are responsible for ensuring that spills from ships are prevented by promoting and enforcing compliance with actions such as ship inspections and prosecution of offenders.
- 1.19 Marine services can help improve the safety of marine transportation and prevent accidents and subsequent ship-source spills. For example, within the Canadian Coast Guard, Marine Communications and Traffic Services broadcasts information such as weather bulletins and ice information and regulates vessel traffic movement, which can reduce the probability of ships being involved in accidents. Another example of prevention is the requirement (since 1 January 2010) that tankers greater than 5,000 gross tonnes have a double hull, as per the International Maritime Organization's International Convention for the Prevention of Pollution from Ships. This design is considered to be more effective than single hull tankers in preventing pollution in the event of accidental grounding or collision.
- **1.20** Detection. Despite pollution prevention efforts, ship-source oil spills may occur. Internationally, aerial surveillance is widely adopted and considered to be an effective method for detecting oil spills. Transport Canada operates the National Aerial Surveillance Program for detecting oil spills at sea. Through partnership with Environment Canada's Canadian Ice Service, Transport Canada has created a Marine Aerial Reconnaissance Team. Since 2006, new technology allows Transport Canada's three surveillance aircraft to cover a much broader area than before, day or night, and in more challenging weather conditions.

- 1.21 Preparedness. Having emergency management plans in place, informed by an up-to-date knowledge of risks regarding ship-source spills and supported by training, exercises, and appropriate spill response equipment, are important aspects of being prepared to respond to ship-source oil and chemical spills.
- 1.22 Response. When a spill does occur, it is important to respond appropriately to minimize environmental and socio-economic impacts. Response activities can include containment and recovery of the pollutant, shoreline cleanup, and wildlife recovery, and can involve local communities, provincial governments, and international cooperation efforts. The specific response should be appropriate to the location, size, and nature of the incident. If necessary, environmental response equipment of certified response organizations and the Canadian Coast Guard may be transferred from across the country to respond to a marine pollution event, including oil spills from ships.

Focus of the audit

- 1.23 The audit focused on preparedness and response; we did not examine prevention or detection activities. We assessed whether Transport Canada, the Canadian Coast Guard, and Environment Canada have plans, systems, or protocols in place to prepare for and respond to ship-source oil and chemical spills. The three federal organizations were selected because of their roles and responsibilities in preparing for and responding to these types of spills. Other land- and marine-based sources of pollutants were not addressed in this audit. We did not examine preparedness and response activities related to offshore drilling, port authorities, or oil-handling facilities.
- 1.24 More details about the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Preparing for ship-source oil spills

1.25 While the ideal is to prevent ship-source oil spills from occurring in the first place, the federal government needs to be prepared to react should a spill occur. The *Emergency Management Act* requires that all federal ministers identify the risks that are within or related to their areas of responsibility; prepare emergency management plans based on those risks; maintain, test, and implement those plans; and conduct training and exercises related to those plans. We examined

whether Transport Canada, the Canadian Coast Guard, and . Environment Canada were meeting these requirements in the *Emergency Management Act*.

Some risk assessments need updating

- 1.26 Risk assessments are important for determining the most likely location of potential ship-source oil spills, the likelihood of different sizes of spills occurring, and the potential impacts and consequences of spills. Risk assessments can provide the basis upon which appropriate prevention, mitigation, and preparedness measures can be planned. Conducting risk assessments and defining risk tolerance levels are also useful for informing decisions on the levels of resources required for responding to a spill (for example, spill response equipment) and where these resources should be located. Risk assessments also provide an opportunity for engaging local communities and informing them of the risks present in their environment resulting from oil shipments.
- conducted risk assessments regarding ship-source oil spills. These include two conducted for Transport Canada: an oil spill risk assessment for the south coast of Newfoundland (2007) and a risk assessment study of oil transportation on the coast of British Columbia (2002). The Coast Guard also completed a risk assessment in 2000 as part of an analysis of response capacity in Canada and conducted an update on the probability of oil spills from tankers in 2002. A variety of factors were considered in these risk assessments, such as shipping patterns and trends, types and amounts of oil shipped, and the likelihood of spills. In addition, some of the Coast Guard's regional emergency plans discuss risks. A good example of this planning is the Coast Guard's Central and Arctic Region, which analyzed risks in the North to help determine where to locate spill response equipment.
- 1.28 Transport Canada also conducts risk assessments as part of the Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL Review Process). A voluntary process, TERMPOL examines risks and mitigation factors for proposed shipping activities in ports involved in the bulk carriage of oil, chemicals, or liquefied gas.
- 1.29 In 2009, the international Arctic Council released the Arctic Marine Shipping Assessment. The assessment included an analysis of the potential impacts of shipping in Canada's Arctic. Both Transport Canada and the Canadian Coast Guard were involved in developing the assessment.

- 1.30 An up-to-date and consistent baseline of risks is important for planning for emergencies, informing investment decisions regarding response equipment, and assessing whether the existing capacity of the oil spill response regime is appropriate. We found that while risk assessments related to ship-source oil spills have been conducted, the approaches to conducting these assessments have not been consistent or systematic, nor are there formal processes for ensuring that risks are being reassessed on an ongoing basis. As a result, the knowledge of risks for ship-source oil spills in Canada is not complete or up to date.
- 1.31 Risk factors that can influence the likelihood and impact of ship-source oil spills may change over time. Such factors can include the implementation of preventative measures, changes in shipping patterns, changes in the types and amounts of oil shipped, trends related to shipping accidents and oil spills, and coastal developments. As a result, it is important that risk factors be reassessed on an ongoing basis and that emergency management plans be adjusted as required.
- 1.32 Recommendation. Building on the risk assessments conducted to date, Transport Canada and the Canadian Coast Guard should conduct a risk assessment related to ship-source oil spills covering Canada's three coasts. The risk assessment should be conducted in consultation with Environment Canada and the shipping industry. Transport Canada and the Canadian Coast Guard should put in place processes so that risks are reviewed on an ongoing basis and the risk assessment is updated as required. The Canadian Coast Guard should ensure that the risk assessment considers the three roles that it plays (federal monitoring officer, on-scene commander, and resource agency).

Environment Canada's response. Agreed. The Department will assist Transport Canada and the Canadian Coast Guard by providing

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will work with Transport Canada to establish a framework

Transport Canada's response. Agreed. Transport Canada has regime. We will build on risk assessments of ship-source oil spill

the three coasts. Scoping of this risk assessment will commence this year and be completed by the end of 2011–12.

Emergency management plans are not all up to date

- 1.33 Ship-source oil spills will likely continue to occur and affect local environments and economies. Emergency plans are important for decision-making authorities in directing response efforts, outlining response procedures, and identifying requirements for equipment and training and exercises. Up-to-date plans facilitate coordinated responses aimed at mitigating and minimizing the impacts of oil spills. The Emergency Management Act requires that all federal ministers prepare emergency management plans within their respective areas of responsibility. We found that the departmental emergency management plans for the Canadian Coast Guard (1998) and Environment Canada (1999) are out of date.
- 1.34 In June 2010, Transport Canada released a plan and a policy for preparedness and response in relation to Canada's Marine Oil Spill Preparedness and Response Regime. We found that Transport Canada's plan outlines roles and responsibilities of all parties in the event of a marine incident, including Transport Canada, the Canadian Coast Guard, Environment Canada, private sector certified response organizations, ships, and oil-handling facilities. The plan's purpose is to establish the national preparedness capacity of Canada's Marine Oil Spill Preparedness and Response Regime. However, the plan does not contain information on the state and expected levels of the preparedness relative to risks, or on mechanisms to ensure an adequate response, and therefore the plan does not fulfill its own purpose, which is to establish Canada's national preparedness capacity.
- 1.35 The Canadian Coast Guard's emergency management plan (called the Marine Spills Contingency Plan) dates back to 1998. Since the release of this plan, significant legislative and administrative changes have occurred that are not reflected in the plan. For example, in December 2003, several sections of the Canada Shipping Act, 2001, including some policy and all regulatory responsibilities for pollution prevention, were transferred from Fisheries and Oceans Canada to Transport Canada. Other changes include revisions to the Canada Shipping Act in 2001 and the enactment of the Emergency Management Act in 2007.
- 1.36 The Coast Guard's plan defines the scope and framework within which it will operate to ensure a response to marine pollution incidents. However, it does not contain an up-to-date response model and related

Major incident—According to the Canadian Coast Guard, a ship-source marine pollution incident that, due to its magnitude, complexity, and/or composition, has the potential to cause significant environmental, economic, public safety, and/or social impacts for which extraordinary coordination of resources and response efforts may be required.

procedures that would be used to manage the Coast Guard's response to a major incident. Nor does the plan mention Public Safety Canada, which could play an important coordinating role in the event of a significant incident.

- 1.37 The various Coast Guard regions have also prepared emergency management plans. Some of these plans have been recently updated (Quebec in 2009 and Central and Arctic in 2008), while the remaining plans date back to 2004 or earlier (Newfoundland and Labrador, 2004; Maritimes, 2004; and Pacific, 2001). These plans are based on the Canadian Coast Guard's 1998 plan, but because they have been updated at different times, they are not consistent across regions.
- 1.38 Given the Canadian Coast Guard's role as the lead responder to ship-source oil spills, the lack of an up-to-date national emergency management plan and model for responding to a major incident presents risks to the Coast Guard's ability to effectively coordinate and oversee a response to a major incident. The Coast Guard recognizes that its plan needs updating and is developing a National Environmental Response Strategy that is expected to be in place by March 2011. The strategy is to be followed by the development of a national response policy and plan for directing its efforts, including those related to a major incident.
- 1.39 Environment Canada's main responsibility related to ship-source oil spill response is to support the Canadian Coast Guard by providing advice received from Regional Environmental Emergencies Teams and by providing expert advice on potential risks and ecologically sensitive areas as well as key physical, biological, and cultural resources. The Department's environmental emergencies plan was released in 1999 and has not been updated since. The Department's regional emergency plans and plans for Regional Environmental Emergencies Teams vary by region in their format and content, and in the date they were last updated.
- 1.40 Emergency management plans are evolving documents; as such, they require regular reviewing and updating to take into account policy; legislative, organizational, and technological changes; and experience and lessons learned from responding to incidents and conducting exercises. We note that in order to maintain their certification, response organizations are required to notify the Minister of Transport of all substantive changes to their emergency management plans immediately after they are made, and at least annually, to update their response plans.

1.41 Recommendation. The Canadian Coast Guard and Environment Canada should update their national emergency management plans and review and update their regional emergency management plans as necessary.

Environment Canada's response. Agreed. The Department will update these plans after completing its Strategic Emergency Management Plan (SEMP). The SEMP will provide an overall framework for the review and update of all of the Department's emergency plans, including the national and regional environmental emergencies management plans.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard is currently developing its National Environmental Response Strategy. This Strategy will be supplemented by the development of a national response policy and associated plans for directing Canadian Coast Guard efforts, including those related to a major incident. The Canadian Coast Guard will establish a periodic review process to ensure its national and regional emergency management plans remain accurate and relevant.

1.42 Recommendation. To ensure that emergency management plans remain up to date, Transport Canada, the Canadian Coast Guard, and Environment Canada should establish processes for reviewing their national and regional plans on a regular basis and updating them as required (for example, due to changes in risks, legislation, roles and responsibilities, and/or lessons learned from significant incidents or exercises).

Environment Canada's response. Agreed. As part of the development of the Strategic Emergency Management Plan (SEMP), the Department will include a maintenance section for the SEMP, which will establish the process for its review/update as well as that of its referenced documents (emergency management plans, business continuity plans, etc.).

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will establish a periodic review process to ensure its national and regional emergency management plans remain accurate and relevant.

Transport Canada's response. Agreed. Transport Canada recognizes the need for up-to-date emergency management plans and, to this end, in 2010, updated its Environmental Prevention and Response National Preparedness Plan. Transport Canada will build on its current practice by reviewing and updating this plan annually.

The Canadian Coast Guard lacks a national approach to training, testing its plans, and maintaining its equipment

- 1.43 The Emergency Management Act requires that federal ministers conduct training and exercises as a means of testing their emergency management plans. Training and exercises are important for maintaining and testing readiness to respond to ship-source oil spills. Our examination focused on the Canadian Coast Guard, given its role as the federal government's lead responder. Factors such as the health and safety hazards that responders face when responding to an oil spill, the various techniques that can be adopted in cleaning up an oil spill (Exhibit 1.4), and the different types of equipment that can be used (booms, skimmers, absorbents, and treatment agents used to break down oil) make regular training and exercises important.
- 1.44 Training and exercises. The Canadian Coast Guard has committed to ensuring that its personnel dealing with ship-source oil spills are trained to function under a nationally consistent emergency management system. We found that training is being provided to Canadian Coast Guard personnel. However, the Coast Guard lacks an overall national training plan, and there are only two draft competency

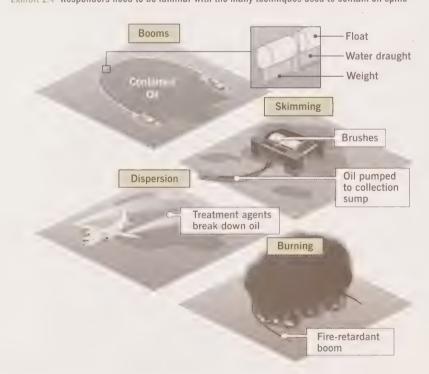


Exhibit 1.4 Responders need to be familiar with the many techniques used to contain oil spills

Source: Adapted from BBC News documentation

profiles in place (for the federal monitoring officer and on-scene commander). Both a national training plan and competency profiles for all environmental response positions are important for outlining basic training requirements that need to be provided across regions and for ensuring that a nationally consistent training program is being delivered. As a result, training is delivered on an ad hoc basis across regions. While training that is tailored to the needs of individual regions is important, it is also important that staff from across regions have the same basic training to ensure a consistent response in the case of a major spill that requires multiple regions to respond.

- 1.45 In response to a recent (2010) internal audit of its Environmental Response Program, the Canadian Coast Guard has committed to taking several actions to help ensure that its employees receive the required training and that course content remains pertinent. In particular, the Agency has committed to developing competency profiles for all of the environmental response positions and functions that would be required to respond to a major pollution incident, a national training plan that defines training requirements, and a process for monitoring implementation of this plan. The target date for completing these actions is 31 March 2012.
- 1.46 Conducting exercises for responding to ship-source oil spills allows both government officials and other stakeholders, such as private sector certified response organizations, to test their response plans. Considered an essential element in the ongoing process of planning for ship-source oil spill response operations, these exercises allow for identifying gaps in responses, areas for improvement, and lessons learned. The exercises also foster continuous improvement and help organizations maintain their readiness for responding to oil spills. In the early 1990s, the Canadian Coast Guard developed a national exercise program that presented the principles, guidelines, and planning tools to be used in conducting oil spill response exercises. We note that the program has not been updated since it was first released.
- 1.47 In March 2010, the Coast Guard conducted a table-top exercise designed to test its ability to respond to a major oil spill of national significance. This exercise involved headquarters as well as selected regional staff. The exercise identified important lessons learned, including the Agency's lack of a response model and related procedures for responding to a major oil spill.
- 1.48 The Canadian Coast Guard also conducts exercises at the regional level, ranging from table-top exercises to on-the-ground exercises involving a variety of organizations. For example, it

Table-top exercise—A simulated paper-based exercise used to test the response capabilities of organizations.

participates on an ad hoc basis in exercises conducted by certified response organizations and in more formal joint exercises with the United States Coast Guard. However, except for the March 2010 table-top exercise, we found no evidence that inter-regional exercises are taking place. Inter-regional exercises are useful for testing the procedures necessary for transferring resources from one region to the next, or in areas where a spill may involve more than one region (for example, the Gulf of St. Lawrence, which involves three different administrative Coast Guard regions).

- 1.49 While the Canadian Coast Guard is conducting and participating in regional ship-source oil spill response exercises, Coast Guard headquarters does not have a process for overseeing exercises and cannot provide assurance that the Agency's regions are following and implementing its national exercise program. Furthermore, we found that the conduct, frequency, and documentation of exercises involving the Coast Guard varies, ranging from official post-exercise evaluation reports to notes prepared by the individual participating in an exercise. A database established to capture and share lessons learned and recommendations resulting from exercises is also no longer being supported or used; as a result, there is no consistent or systematic documenting of exercises or sharing of lessons learned.
- 1.50 Recommendation. The Canadian Coast Guard should update its program for conducting ship-source oil spill response exercises, including the type and frequency of exercises to be conducted (including inter-regional exercises), which organizations should be involved in the exercises, and requirements for documenting exercises. It should also establish procedures for ensuring that recommendations and lessons learned from these exercises are shared among regions and acted upon.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard is currently reviewing its program for response exercises, including ship-source oil tesponse exercises, and will develop a revised exercise plan.

1.51 Management of response equipment. Having a consistent approach to managing response equipment can help the Coast Guard answer important asset management questions such as how well its equipment is functioning, how much equipment is beyond its useful life and at risk of failing, when equipment needs to be replaced, and whether there are cost-effective alternatives to replacing aging equipment.

- 1.52 To manage the life cycle of its oil spill response equipment, the Canadian Coast Guard relies on a system called the Integrated Response Capacity Management System. However, this system is not consistently used from region to region, and it has not been updated since the late 1990s. As a result, the Coast Guard's life-cycle management of its equipment is not consistent, making current and reliable information on its equipment difficult to obtain. The Coast Guard recognizes that it needs to improve the management of its equipment. It has committed to implementing a nationally consistent life-cycle management approach, assessing its current inventory of equipment to determine if assets are appropriate, and developing an integrated investment plan.
- 1.53 The Coast Guard has expressed concern that the age and condition of its oil spill response equipment is putting its preparedness and response capability at risk. For example, some equipment may no longer be fully functional and may not incorporate newer and potentially more effective cleanup technology.
- 1.54 During our interviews and document reviews, Coast Guard staff raised a number of concerns about the investment in the Canadian Coast Guard's equipment. For example, investment in equipment has been on an ad hoc regional basis and has been driven by the availability of funds rather than by a coordinated risk-based investment strategy.
- 1.55 We note that in 2007, the Canadian Coast Guard received funding of about \$2.3 million as part of Canada's Health of the Oceans Initiatives to purchase oil spill response equipment for various locations across Canada's North. The funding does not cover costs for operations and maintenance. Funding of \$5 million was also provided to the Coast Guard as part of Canada's Economic Action Plan. This funding, along with \$5 million of the Coast Guard's own funding, is earmarked for the replacement of 30 existing pollution response barges for use in all regions. Delivery of these vessels is expected to be completed by 31 March 2011.
- 1.56 In 2000, the Canadian Coast Guard completed an assessment of Canada's ship-source oil spill response capacity that identified gaps and duplication in oil spill response coverage; no update has been conducted since. Although it has concerns over the state of its equipment, due to the lack of current information on risks and a recent capacity analysis, the Coast Guard is not able to determine how much oil spill response equipment it should have. In addition, it

cannot determine whether the capacity that exists in Canada to respond to ship-source oil spills is appropriate to address risks.

1.57 Recommendation. The Canadian Coast Guard should assess its response capacity, taking into account the capacity of the private sector, against risks related to ship-source oil spills. This information should be used by the Canadian Coast Guard to inform future investment decisions.

Canadian Coast Guard's response. Agreed. The risk assessments discussed in recommendation 1:32 will necessarily inform the Atlantic, Pacific, and Arctic regions, taking into account the existing Arctic risk assessments related to ship-source oil spills.

Procedures for verifying preparedness of the Canadian Coast Guard are not in place

- As we note in paragraph 1.8, Canada has a marine pollution preparedness and response system for ships that contains two equally important components: Canada's Marine Oil Spill Preparedness and Response Regime (which includes the private sector certified response organizations regulated by Transport Canada), and the Government of Canada's operational response capacity, contained within the Canadian Coast Guard.
- Transport Canada ensures that the certified response organizations maintain the capacity to respond to ship-source oil spills of up to 10,000 tonnes. In particular, Transport Canada reviews these organizations every three years as a means of certifying that they meet criteria set out in the Canada Shipping Act, 2001 and related response organization regulations. This includes ensuring these organizations have up-to-date response plans that describe in detail their procedures (including training and exercises), equipment, and resources that are in place to respond to ship-source oil spills.
- Similar procedures and criteria for ensuring readiness are not in place for the federal government component of Canada's marine pollution preparedness and response system—namely the Coast Guard. In our opinion, similar procedures should be applied as a means of providing assurance that the federal component of the oil spill response system is ready to respond in an effective manner when needed.

1.61 Recommendation. In order to ensure the readiness of the Government of Canada's operational response capacity, the Canadian Coast Guard, with input from Transport Canada, should periodically verify its preparedness to respond to ship-source oil spills (based on predetermined procedures and criteria).

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will establish a periodic review process to verify its preparedness for ship-source oil spills. The risk assessments identified and discussed in recommendation 1.32 and the response capacity assessments identified in recommendation 1.57 will necessarily inform the Canadian Coast Guard verification of its level of preparedness for ship-source oil spills in the Atlantic, Pacific, and Arctic regions.

Responding to ship-source spills

1.62 When a ship-source spill occurs, it is important to respond appropriately to minimize environmental impacts. Monitoring and assessing responses to such spills are important for ensuring that responses are appropriate and effective. Treasury Board policies related to managing for results outlines the requirements for federal departments and agencies for monitoring and using performance information to support decisions on program management.

Responses to ship-source spills are poorly documented

- Between 2007 and 2009, a total of about 4,160 pollution incidents involving spills of oil, chemicals, or other pollutants into Canadian waters were reported to the Canadian Coast Guard; about 2,000 were ship-source spills. These spills involved a variety of vessels, ranging from pleasure craft and fishing boats to barges, cargo vessels, and tankers. The remaining spills came from land-based sources (about 245), oil handling facilities (about 30), mystery sources (spills where the source could not be confirmed—about 1,630), and other sources (about 255). Pollution incidents are reported to the Canadian Coast Guard by a variety of sources, including the general public. Although they are reported as pollution incidents, in some cases they may not be caused by a spill. Rather, upon investigation, it may be determined that what was originally suspected to be pollution may in fact be something quite different (for example, pollen or algae). According to Coast Guard data, more than 75 percent of reported incidents occurred in Canada's marine environment.
- **1.64** The Marine Pollution Incident Reporting System. As either federal monitoring officer or on-scene commander, the Canadian Coast Guard monitors or responds to ship-source oil spills to ensure an

appropriate response takes place. In 2001, the Canadian Coast Guard implemented the Marine Pollution Incident Reporting System (MPIRS) to record and track marine pollution incidents and subsequent actions. We examined a random sample of 31 files from the system (from January 2007 to December 2009) to determine how the Coast Guard was monitoring and assessing responses to ship-source spills. Our sample was drawn from incidents that involved vessels and mystery sources and that required a mobilization of resources.

- 1.65 We found that the Canadian Coast Guard's responses to these spills were poorly documented and that information contained in the MPIRS was incomplete and of questionable quality. For example, the MPIRS reports do not clearly indicate the level of effort spent by the Coast Guard in responding to spills, or the results of the response efforts, such as the estimated amount of oil recovered and the environmental impacts resulting from the spills. We also noted some significant variations from year to year in terms of the estimates of the volume of spills. We were informed that these anomalies may be due to individual incidents or input errors. However, there is no quality assurance program for the MPIRS, which may otherwise have found these errors.
- **1.66** Conducting post-incident assessments, when appropriate, is useful for debriefing on how spill responses are conducted to identify problems encountered, lessons learned, and recommendations for improvement. Of the 31 files analyzed in our sample, none contained a post-incident assessment.
- 1.67 Environment Canada is the federal authority for providing environmental advice during a ship-source oil or chemical spill. Of the files that we examined, Environment Canada was involved in more than half of the incidents, and it provided advice in all of these cases. We found that Environment Canada, when requested, provided advice either directly to the Canadian Coast Guard or through the Regional Environmental Emergencies Team. This included advice on topics such as shoreline characteristics; sensitive areas such as habitat, species, and infrastructure in the vicinity of a spill that could be affected; and spill trajectories.
- 1.68 We found that there is no central repository where all pertinent information related to an incident, including environmental or socio-economic damages, is documented. For example, information on environmental impacts was often captured by Environment Canada and documented in its files; however, this information was rarely included in the Canadian Coast Guard's files.

- 1.69 The Canadian Coast Guard's objectives regarding environmental response are to minimize the environmental, economic, and public safety impacts of marine pollution incidents, including ship-source oil spills. Incomplete and unreliable documentation on responses to ship-source spills affects the Canadian Coast Guard's ability to know how well it is achieving its objectives. Limitations associated with the MPIRS also prevent the Coast Guard from conducting reliable trend analysis on ship-source spills, which in turn is important for conducting risk assessments and assessing the adequacy of equipment and capacity.
- 1.70 Recommendation. The Canadian Coast Guard should implement a quality assurance program for its Marine Pollution Incident Reporting System. The Coast Guard should also establish procedures so that the results of spill responses are consistently documented. The level of documentation on responses should be proportionate to the significance of the incident and, where applicable, contain information on contributions from other entities.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will undertake a review to identify the required characteristics and parameters of a quality assurance program for its reporting systems for marine pollution incidents. The Coast Guard will strengthen its procedures so that the results of spill responses are consistently documented.

- 1.71 Incident response system. Using a common system for emergencies contributes to standard response and operational procedures, and a reduced potential for miscommunication when responding to incidents. Inconsistent use may be a concern in the event of a major ship-source spill where resources are shared among regions. The Canadian Coast Guard, certified response organizations, and other federal entities in Canada and the United States use response systems that are based on the Incident Command System, which was originally developed in the United States in the 1970s.
- 1.72 The Canadian Coast Guard's system is called the Response Management System. Concerns have been raised by some stakeholders that the Response Management System could affect coordination of a response to a major spill that requires a multi-party response.
- 1.73 Recommendation. The Canadian Coast Guard should review the differences between the Response Management System and Incident Command System, assess whether these differences could affect a multi-party response to a major spill, and address significant differences, if any.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will endeavour to identify the differences between the Response Management System and Incident Command System. This will to a major spill.

Preparing for ship-source chemical spills

1.74 Hazardous and noxious substances are regarded as a category of dangerous goods that comprises substances with dangerous properties. Hazardous and noxious substances are transported in bulk and in containers aboard ships, as well as by rail and in trucks. The multiple modes for transporting these chemicals, coupled with the wide variety and very large number of such substances, presents important policy challenges for the design of a response regime. This has been recognized both domestically and internationally with the separation of the two response regimes—one dealing with oil and the other with hazardous and noxious substances—under the International Maritime Organization's (IMO) International Convention on Oil Pollution Preparedness, Response and Co-operation.

There is no national regime for ship-source chemical spills

- 1.75 An emergency response regime for hazardous and noxious substances as well as for oil was recommended in the 1990 Brander-Smith Report. Some 20 years later there is no regime in Canada for dealing with hazardous and noxious substances that clearly outlines roles and responsibilities, including those of federal government departments and agencies and industry.
- 1.76 In March 2000, the IMO adopted the Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances. Parties to the Protocol are required to establish measures for dealing with pollution incidents involving hazardous and noxious substances. This includes a national system to be put in place, including a designated national authority, a national operational contact point, a national contingency plan, as well as a minimum level. of response equipment, communications plans, and regular training and exercises. The Protocol entered into force on 14 June 2007 after ratification by at least 15 IMO member states. Canada has not ratified the Protocol.
- 1.77 Transport Canada is responsible for developing the regime for hazardous and noxious substances. In our opinion, such a regime is important so that the entities who would typically be involved in responding to a spill—such as ports, private chemical response

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companies, local fire departments, and the Canadian Coast Guard—know what role they would play. Better understanding their respective roles will allow them to make better and more informed decisions regarding (among other things) training, exercises, and equipment investments. Transport Canada officials told us that they have been consulting with various stakeholders on developing a Canadian regime and ratifying the Protocol on hazardous and noxious substances; the Department is planning to have the regime in place by 2013. In the interim, Canada lacks a formal framework for responding to ship-source chemical spills including clear roles and responsibilities.

1.78 Officials from Transport Canada informed us that one of the challenges they face in establishing a regime is that the data on the type and quantity of hazardous and noxious substances transported by ship is not at a level of detail appropriate for the Department's needs.

1.79 Recommendation. In order to facilitate the development of a hazardous and noxious substance regime in Canada, Transport Canada should take the necessary steps to ensure that it has adequate data on the type and quantity of hazardous and noxious substances transported by ship in Canada.

Transport Canada's response. Agreed. Transport Canada will work with key departments and agencies (including the Canada Border Services Agency, Statistics Canada, and the Canadian Coast Guard) to develop the necessary procedures and systems so emergency responders have access to near real-time information for all hazardous and noxious products transported by ships in Canadian waters. Considering that the Canada Border Services Agency and the Canadian Coast Guard already have systems and procedures in place for obtaining vessel cargo manifest and data, Transport Canada will initiate discussions no later than the spring of 2011 and seek their collaboration to adapt the data and make it available for the proposed Marine Hazardous and Noxious Substances Incident Preparedness and Response Regime.

Conclusion

- 1.80 We examined whether Transport Canada, the Canadian Coast Guard, and Environment Canada have taken reasonable actions to prepare for and respond to pollution incidents caused by ship-source oil and chemical spills in Canada's Arctic, Pacific, and Atlantic Ocean waters, and the Gulf of St. Lawrence.
- 1.81 We found that, while Transport Canada and the Canadian Coast Guard have done risk assessments related to ship-source oil spills, the approaches to conducting these assessments have not been consistent or systematic, nor are there formal processes for ensuring that risks are being reassessed on an ongoing basis. As a result, the knowledge of risks in Canada regarding ship-source oil spills, which is important for emergency planning, is neither complete nor up to date. Furthermore; the emergency management plans of the Canadian Coast Guard and Environment Canada, which are important federal players when responding to ship-source oil spills, are not all up to date.
- **1.82** While the Canadian Coast Guard is delivering training and conducting exercises for dealing with ship-source oil spills, it does not have the systems necessary to ensure that its training and exercise programs are being delivered in a nationally consistent manner.
- 1.83 The Canadian Coast Guard, the lead federal agency for responding to ship-source oil spills, has not conducted an assessment of its ship-source oil spill response capacity since 2000. While concerns have been raised regarding the state of the Coast Guard's oil spill response equipment, given the lack of recent capacity analyses and the lack of up-to-date knowledge on risks, the Coast Guard does not know if its ship-source oil spill response capacity is appropriate to address those risks.
- 1.84 Transport Canada assesses private sector certified response organizations to ensure that they meet criteria set out in the *Canada Shipping Act*, 2001. This includes verifying that these organizations have (among other things) up-to-date emergency management plans, adequate training and exercises, and the equipment necessary to respond to ship-source oil spills of up to 10,000 tonnes. Similar procedures do not exist for ensuring the Canadian Coast Guard's readiness to respond to spills.
- 1.85 The Coast Guard lacks complete and reliable documentation on responses to ship-source oil spills, which affects its ability to know how well it is achieving its objectives of minimizing the environmental,

economic, and public safety impacts of marine pollution incidents. Limitations associated with the system the Coast Guard has in place to track oil spills also prevents it from conducting reliable trend analysis on ship-source oil spills in Canada.

- 1.86 Recommendations were made by a public review panel to the federal government 20 years ago to put in place a national regime to deal with ship-source spills involving hazardous and noxious substances. Such a regime is not yet in place and is not expected to be implemented before 2013. In the meantime, Canada lacks a formal framework for responding to chemical spills, including clear roles and responsibilities.
- **1.87** We have identified a number of important gaps—ranging from emergency planning to documenting spill responses. Overall, we conclude that these gaps need to be filled by the federal government in order to provide assurance that its planning, systems, and procedures are reasonably supporting preparedness and response efforts regarding ship-source oil and chemical spills in Canada's marine environment.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objectives

The objective of the audit was to determine whether Transport Canada, the Canadian Coast Guard (Fisheries and Oceans Canada), and Environment Canada have taken reasonable actions to implement legislated and other measures to prepare for and respond to pollution from ships in Canada's marine environment.

In support of this objective, the two sub-objectives for the audit are

- to determine whether Transport Canada, the Canadian Coast Guard, and Environment Canada have plans, systems, or protocols to prepare to respond to ship-source spills, including having appropriate emergency plans and the capacity to respond to ship-source spills involving oil and hazardous substances; and
- to determine whether Transport Canada, the Canadian Coast Guard, and Environment Canada have assessed the responses to ship-source spills, including ship-source spills involving oil and hazardous substances.

Scope and approach

The audit examined the federal government's management of pollution incidents caused by oil and hazardous and noxious substances in Canada's Atlantic, Pacific, and Arctic Ocean waters and the Gulf of St. Lawrence. The focus of the audit was on the federal government's responsibilities in these areas, as defined by the Canada Shipping Act, 2001, the Arctic Waters Pollution Prevention Act, the Migratory Birds Convention Act, 1994, the Emergency Management Act, and their relevant regulations. This legislation also incorporates Canada's obligations under various international agreements, including the International Convention for the Prevention of Pollution from Ships and the International Convention on Oil Pollution Preparedness, Response and Co-operation.

The majority of the work was conducted through interviews with entity officials and other stakeholders, as well as a review of relevant documentation. In carrying out the audit, the team met with headquarters staff and visited regional offices in order to conduct interviews and collect documentation as needed.

A sample of ship-source pollution incidents occurring in the marine environment was examined to assess how responses to incidents were being monitored and assessed. Incidents were selected between January 2007 and December 2009 and involved vessels or mystery sources (incidents where the source could not be confirmed); incidents from land-based sources, oil handling facilities, and other sources were excluded. Selection of this sample was based on information contained in the Canadian Coast Guard's Marine Pollution Incident Reporting System.

Criteria

To determine whether Transport Canada, the Canadian Coast Guard, and Environment Canada have plans, systems, or protocols to prepare to respond to ship-source spills, including having appropriate emergency plans and the capacity to respond to ship-source spills involving oil and hazardous substances, we used the following criteria:

Criteria	Sources			
Transport Canada, the Canadian Coast Guard, and Environment Canada have appropriate emergency plans for responding to ship-source oil and chemical spills.	Emergency Management Act, section 6(1) (2)			
	Canada Shipping Act, 2001			
	Arctic Waters Pollution Prevention Act			
	1973 Cabinet Directive 1175-73RD on environmental emergencies			
	International Convention for the Prevention of Pollution from Ships, International Maritime Organization, 1973			
	International Convention on Oil Pollution Preparedness, Response and Co-operation, International Maritime Organization, 1990			
	Our Waters, Our Future: Sustainable Development Strategy 2007–2009 (Outcome B.1), Fisheries and Oceans Canada 2006			
Transport Canada, the Canadian Coast Guard, and Environment Canada assess the adequacy of their emergency response plans.	Emergency Management Act, section 6(1) (2)			
	Canada Shipping Act, 2001			
	Arctic Waters Pollution Prevention Act			
	1973 Cabinet Directive 1175-73RD on environmental emergencies			
	International Convention for the Prevention of Pollution for Ships, International Maritime Organization, 1973			
	 International Convention on Oil Pollution Preparedness, Response and Co-operation, International Maritime Organization, 1990 			
	 Our Waters, Our Future: Sustainable Development Strategy 2007–2009 (Outcome B.1), Fisheries and Oceans Canada, 2006 			

To determine whether Transport Canada, the Canadian Coast Guard, and Environment Canada have assessed the responses to ship-source spills including ship-source spills involving oil and hazardous substances, we used the following criteria:

Criteria	• Canada Shipping Act, 2001, section 180 • Migratory Birds Convention Act, 1994, section 5.1			
The Canadian Coast Guard and Environment Canada monitor polluter-led responses to ship-source oil and chemical spills, including the response of certified response organizations.				
Transport Canada, the Canadian Coast Guard, and Environment Canada assess the adequacy of the response to ship-source oil and chemical spills.	 Canada Shipping Act, 2001, section 180 Policy on Management, Resources and Results Structures (section 5.2.1, Managing for Results), Treasury Board of Canada Secretariat, 2008 			

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

This audit covers the period from January 2007 to the end of May 2010. Audit work for this chapter was substantially completed on 30 June 2010.

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 1. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation

Preparing for ship-source oil spills

1.32 Building on the risk assessments conducted to date, Transport Canada and the Canadian Coast Guard should conduct a risk assessment related to ship-source oil spills covering Canada's three coasts. The risk assessment should be conducted in consultation with Environment Canada and the shipping industry. Transport Canada and the Canadian Coast Guard should put in place processes so that risks are reviewed on an ongoing basis and the risk assessment is updated as required. The Canadian Coast Guard should ensure that the risk assessment considers the three roles that it plays (federal monitoring officer, on-scene commander, and resource agency). (1.26 - 1.31)

Response

Environment Canada's response. Agreed. The Department will assist Transport Canada and the Canadian Coast Guard by providing scientific expertise and knowledge.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will work with Transport Canada to establish a framework facilitating the undertaking of risk assessment related to ship-source oil spills off Canada's three coasts.

Transport Canada's response. Agreed. Transport Canada has undertaken talks with the Canadian Coast Guard and Environment Canada with a view to reviewing Canada's national oil spill response regime. We will build on risk assessments of ship-source oil spill preparedness and response regimes of all Canadian waters, including the three coasts. Scoping of this risk assessment will commence this year and be completed by the end of 2011–12.

1.41 The Canadian Coast Guard and Environment Canada should update their national emergency management plans and review and update their regional emergency management plans as necessary. (1.33–1.40)

1.42 To ensure that emergency management plans remain up to date, Transport Canada, the Canadian Coast Guard, and Environment Canada should establish processes for reviewing their national and regional plans on a regular basis and updating them as required (for example, due to changes in risks, legislation, roles and responsibilities, and/or lessons learned from significant incidents or exercises). (1.33–1.40)

Response

Environment Canada's response. Agreed. The Department will update these plans after completing its Strategic Emergency Management Plan (SEMP). The SEMP will provide an overall framework for the review and update of all of the Department's emergency plans, including the national and regional environmental emergencies management plans.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard is currently developing its National Environmental Response Strategy. This Strategy will be supplemented by the development of a national response policy and associated plans for directing Canadian Coast Guard efforts, including those related to a major incident. The Canadian Coast Guard will establish a periodic review process to ensure its national and regional emergency management plans remain accurate and relevant.

Environment Canada's response. Agreed. As part of the development of the Strategic Emergency Management Plan (SEMP), the Department will include a maintenance section for the SEMP, which will establish the process for its review/update as well as that of its referenced documents (emergency management plans, business continuity plans, etc.).

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will establish a periodic review process to ensure its national and regional emergency management plans remain accurate and relevant.

Transport Canada's response. Agreed. Transport Canada recognizes the need for up-to-date emergency management plans and, to this end, in 2010, updated its Environmental Prevention and Response National Preparedness Plan. Transport Canada will build on its current practice by reviewing and updating this plan annually.

- should update its program for conducting ship-source oil spill response exercises, including the type and frequency of exercises to be conducted (including inter-regional exercises), which organizations should be involved in the exercises, and requirements for documenting exercises. It should also establish procedures for ensuring that recommendations and lessons learned from these exercises are shared among regions and acted upon. (1.43–1.49)
- 1.57 The Canadian Coast Guard should assess its response capacity, taking into account the capacity of the private sector, against risks related to ship-source oil spills. This information should be used by the Canadian Coast Guard to inform future investment decisions. (1.51–1.56)
- 1.61 In order to ensure the readiness of the Government of Canada's operational response capacity, the Canadian Coast Guard, with input from Transport Canada, should periodically verify its preparedness to respond to ship-source oil spills (based on predetermined procedures and criteria). (1.58–1.60)

Response

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard is currently reviewing its program for response exercises, including ship-source oil response exercises, and will develop a revised exercise plan.

Canadian Coast Guard's response. Agreed. The risk assessments discussed in recommendation 1.32 will necessarily inform the Canadian Coast Guard assessment of its response capacity in the Atlantic, Pacific, and Arctic regions, taking into account the existing response capacity of the private sector. Hence, Coast Guard response capacity assessments will be informed by the Atlantic, Pacific, and Arctic risk assessments related to ship-source oil spills.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will establish a periodic review process to verify its preparedness for ship-source oil spills. The risk assessments identified and discussed in recommendation 1.32 and the response capacity assessments identified in recommendation 1.57 will necessarily inform the Canadian Coast Guard verification of its level of preparedness for ship-source oil spills in the Atlantic, Pacific, and Arctic regions.

Responding to ship-source spills

The Canadian Coast Guard should implement a quality assurance program for its Marine Pollution Incident Reporting System. The Coast Guard should also establish procedures so that the results of spill responses are consistently documented. The level of documentation on responses should be proportionate to the significance of the incident and, where applicable, contain information on contributions from other entities. (1.63-1.69)

The Canadian Coast Guard should review the differences between the Response Management System and Incident Command System, assess whether these differences could affect a multi-party response to a major spill, and address significant differences, if any. (1.71-1.72)

Response

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will undertake a review to identify the required characteristics and parameters of a quality assurance program for its reporting systems for marine pollution incidents. The Coast Guard will strengthen its procedures so that the results of spill responses are consistently documented.

Canadian Coast Guard's response. Agreed. The Canadian Coast Guard will endeavour to identify the differences between the Response Management System and Incident Command System. This will include whether these differences could affect a multi-party response to a major spill.

Preparing for ship-source chemical spills

1.79 In order to facilitate the development of a hazardous and noxious substance regime in Canada, Transport Canada should take the necessary steps to ensure that it has adequate data on the type and quantity of hazardous and noxious substances transported by ship in Canada. (1.75–1.78)

Response

Transport Canada's response. Agreed. Transport Canada will work with key departments and agencies (including the Canada Border Services Agency, Statistics Canada, and the Canadian Coast Guard) to develop the necessary procedures and systems so emergency responders have access to near real-time information for all hazardous and noxious products transported by ships in Canadian waters. Considering that the Canada Border Services Agency and the Canadian Coast Guard already have systems and procedures in place for obtaining vessel cargo manifest and data, Transport Canada will initiate discussions no later than the spring of 2011 and seek their collaboration to adapt the data and make it available for the proposed Marine Hazardous and Noxious Substances Incident Preparedness and Response Regime.



Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—Fall 2010

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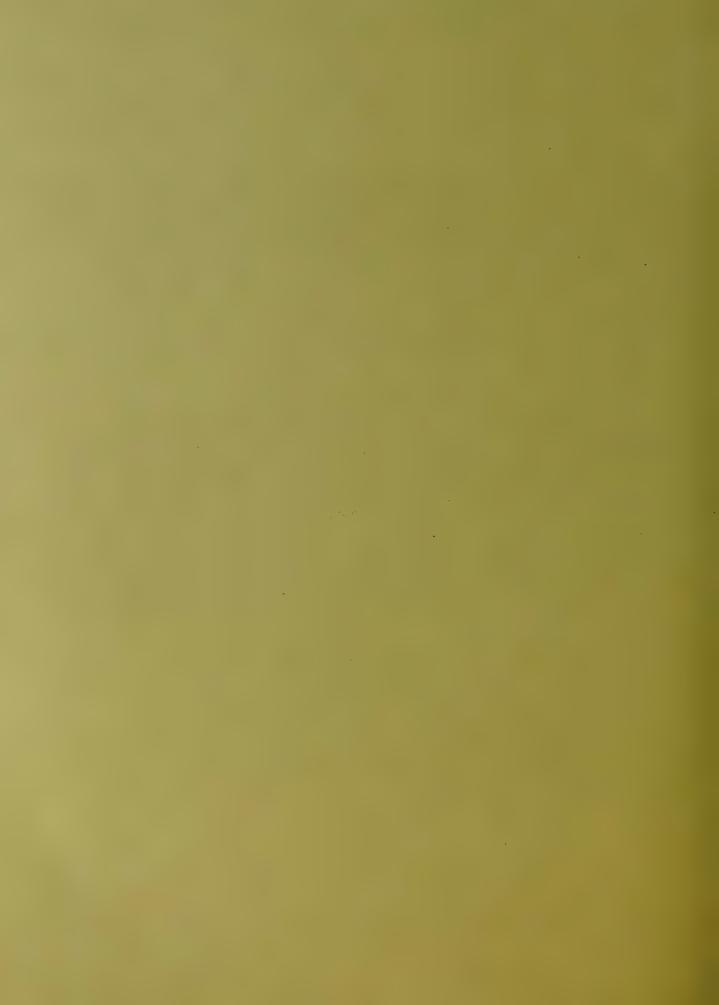
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Report of the
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to the House of Commons

FALL

Chapter 2
Monitoring Water Resources



Office of the Auditor General of Canada



2010



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Report of the

Commissioner of the Environment and Sustainable Development to the House of Commons

Chapter 2 **Monitoring Water Resources**



The Fall 2010 Report of the Commissioner of the Environment and Sustainable Development comprises The Commissioner's Perspective, Main Points—Chapters 1 to 3, an appendix, and four chapters. The main table of contents for the Report is found at the end of this publication.



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Chapter

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· Monitoring Water Resources

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Monitoring Water Resources

Main Points

What we examined

Canada is home to roughly seven percent of the Earth's renewable fresh water. From the Gander River in the east to Campbell River in the west, to the Mackenzie River in the north, and thousands of other rivers and lakes in between, water defines our landscape. Environment Canada maintains two programs to monitor the long-term quality and quantity of surface fresh water resources in Canada.

The Department's Fresh Water Quality Monitoring program monitors long-term water quality at 456 sites across the country to assess and report on the status of Canada's rivers and lakes and on changes to the health of aquatic ecosystems. The data and information produced by the program are intended to serve various water management activities and needs, such as establishing baseline conditions, determining trends in aquatic ecosystem health, and detecting emerging water quality issues. The data and information provided by the program are also intended to inform regulatory activities.

The Department's National Hydrometric Program monitors the quantity of surface water resources at 2,107 sites across the country and is intended to provide Canadians with the data, information, and knowledge they need to make water management decisions. Water quantity data and information are used to determine how much water is available for various uses such as irrigation and industrial and domestic uses, to make trans-boundary water allocation decisions, and for flood forecasting.

We examined how Environment Canada manages each of these programs and how it measures and reports on the programs' performance.

Audit work for this chapter was substantially completed on 30 June 2010.

Why it's important

According to recent public opinion polls, Canadians regard fresh water as the country's most important natural resource, more important than oil and gas and forestry. Fresh water is a critical factor in most economic and industrial activities, from the production of goods and

services, including food, to recreation and tourism. Canadians count on fresh water for just about every aspect of their lives. Water is also essential to the health of ecosystems and, in turn, to the well-being of Canadians.

Understanding the status and long-term trends in the quality and quantity of the country's fresh water resources is of vital importance to Canada's future prosperity.

What we found

- Environment Canada is not adequately monitoring the quality and quantity of Canada's surface water resources. Although it has run the Fresh Water Quality Monitoring program and the National Hydrometric Program since the 1970s, the Department has not fully defined the extent of its water monitoring responsibilities, particularly on federal lands such as First Nations reserves, Canadian Forces bases, national parks, and national wildlife areas. The Department is not monitoring water quality on the majority of federal lands and does not know whether other federal departments are doing so. As a result, there may be vast areas under federal jurisdiction where fresh water quality and quantity conditions are not being monitored.
- Environment Canada has not located its monitoring stations based on an assessment of risks to water quality and quantity. As a result, it may not be focusing its monitoring efforts on the activities and substances that pose the greatest risks.
- Both of the water monitoring programs we audited developed quality control procedures intended to ensure that the data they disseminate is fit for their intended uses. The National Hydrometric Program has consistently applied its quality control procedures to validate the data from the stations we examined. The Fresh Water Quality Monitoring program has not. As a result, Environment Canada cannot assure users that its water quality data is fit for their intended uses.
- The Department has not established many of the essential
 management practices needed to plan, implement, assess, and
 improve its long-term monitoring programs. It has not taken the
 initial steps to clearly establish the extent of each program's
 monitoring responsibilities, risk-based priorities, and client needs.
 As a consequence, the Department has no objective basis on which
 to identify opportunities for improvement or take corrective actions
 to improve these programs.

The Department has responded. The Department agrees with all of our recommendations. Its detailed responses follow the recommendations throughout the chapter.

Introduction

- 2.1 Canada faces water management challenges. The quality and quantity of its water resources are under pressure from a range of sources, including urban runoff and sewage, agriculture, and industrial activities. Other long-term threats include population growth, economic development, climate change, and scarce fresh water supplies in certain parts of the country.
- 2.2 In 1984, Environment Canada commissioned a comprehensive review of the federal government's water-related policies and programs. This gave rise to what is commonly referred to as the Pearse Report, which noted the high priority attached by Canadians to water issues. In 1987, the government adopted the Federal Water Policy, intended to improve water management in Canada. Today, public concern about water remains high. Recent public opinion surveys reveal that Canadians are very concerned about water pollution and fresh water shortages, and regard fresh water as the country's most important natural resource.
- **2.3** Adequate long-term trend information on water quality and quantity and the status of Canada's rivers and lakes is important for the timely identification of current and emerging threats and preventative actions. Inadequate or insufficient information could result in expensive remediation activities that might have been avoided had good quality information been readily available.

Federal role in water management

- 2.4 The federal and provincial governments share responsibility for fresh water management. The provinces have authority to legislate with respect to various aspects of water supply and use, pollution control, hydroelectric and non-nuclear power development, irrigation, and recreation within their borders. The federal government also has jurisdiction over aspects of fresh water regulation, including fisheries, navigation, boundary and trans-boundary waters shared with the United States, and federal lands.
- 2.5 Section 44 of the Canadian Environmental Protection Act, 1999 requires the federal Minister of the Environment to establish, operate, and maintain a system for monitoring environmental quality. According to the Act, environment means the components of the earth and includes water, while the definition of environmental quality includes the health of ecosystems. Section 5 of the Canada Water Act

empowers the Minister of the Environment to enter into intergovernmental arrangements to

- establish and maintain an inventory of any waters where there is a significant national interest in the management of such water resources; and
- collect, process, and provide data on the quality, quantity, distribution, and use of those waters.
- A number of federal departments have management 2.6 responsibilities related to federal lands, including Indian and Northern Affairs Canada for First Nations reserves and for the territories, the Department of National Defence for national defence bases, Parks Canada Agency for national parks, and Environment Canada for national wildlife areas. Adequate long-term monitoring data and information on the quality and quantity of fresh water is critical in supporting these and other departments in administering a range of federal responsibilities. It is also critical to enabling the federal government to work effectively with provincial/territorial and international partners in addressing shared water quality and quantity concerns. Long-term data and information on water quality and quantity also support regulatory enforcement activities, international arrangements, and priority government initiatives and reporting responsibilities (Exhibit 2.1).

Exhibit 2.1 Key federal legislation, arrangements, and initiatives supported by long-term monitoring information

- Fisheries Act
- · Canada Shipping Act, 2001
- · Canadian Environmental Protection Act, 1999
- · Canadian Environmental Assessment Act
- · Navigable Waters Protection Act
- Arctic Waters Pollution Prevention Act
- · International Boundary Waters Treaty Act
- · International River Improvements Act
- · Prairie Provinces Water Board
- · Great Lakes Water Quality Agreement
- · Federal Action Plan on Clean Water
- · Canadian Environmental Sustainability Indicators initiative

- 2.7 In its 1987 Federal Water Policy, Environment Canada identified two goals: to protect and enhance the quality of Canada's water resources, and to promote the wise and efficient management and use of water. To achieve these goals, the policy set out strategies for science leadership, integrated planning, water pricing, legislation, and public awareness.
- 2.8 Under its science leadership strategy, the policy notes the need for reliable and readily available data (on water quantity, quality, and use) describing the health and value of Canada's fresh waters. In particular, the policy recognizes the federal government's national responsibility for developing and maintaining water data and information systems to help manage Canada's water resources. In support of its integrated planning strategy for the development and management of water resources, the federal government committed to cooperation between the various government agencies and institutions.
- 2.9 The federal government's two main surface water monitoring programs—the National Hydrometric Program and the Fresh Water Quality Monitoring program—have been managed by Environment Canada since the early 1970s. Both programs help to ensure that aquatic ecosystems are conserved and protected so that Canada's water is clean, safe, and secure.

Monitoring the quality of surface fresh water

- **2.10** When Environment Canada was restructured in the early 1990s, the Fresh Water Quality Monitoring program shifted from national coordination to a decentralized approach that allowed regional monitoring programs to run independently. It shifted back to a national approach in 2006 and has been managed on a national basis since then.
- 2.11 The program manages 456 long-term water quality monitoring stations as well as a number of short-term surveillance and biological monitoring stations through five regional offices across Canada (Exhibit 2.2). It is part of Environment Canada's Science and Technology Branch. In the 2009–10 fiscal year, total program spending was \$14.1 million, of which \$10.5 million was allocated to its long-term water quality monitoring component. This represents approximately one percent of Environment Canada's overall budget. Program funding for long-term water quality monitoring remained relatively stable from the 2006–07 to 2009–10 fiscal years.

2009–10
Pacific–Yukon: 58 sites
Prairies–North: 62 sites
Ontario: 187 sites
Quebec: 13 sites
Atlantic: 136 sites

Exhibit 2.2 Location of long-term water quality monitoring stations

Source: Environment Canada, Fresh Water Quality Monitoring program, 2010

2.12 The Fresh Water Quality Monitoring program is intended to provide knowledge and understanding of the impacts and risks of human activities to water quality and the health of aquatic ecosystems. The objective is to assess and report on the status of Canada's rivers and lakes, as well as changes to aquatic ecosystem health. The program aims to provide data and information for users with various needs, such as

- establishing baseline and reference conditions of water quality;
- determining long-term trends;
- determining compliance with established guidelines for water, fish, and sediment;
- detecting emerging issues and threats;
- measuring response to remedial measures and regulatory decisions;
- establishing water quality guidelines;
- assessing and managing risk; and
- reporting on the Canadian Environmental Sustainability Indicators' water quality indicator.

2.13 In 2004, the federal government launched the Canadian Environmental Sustainability Indicators (CESI) initiative. The aim was to establish a core set of environment and sustainable

Aquatic ecosystem health—Healthy aquatic ecosystems are those where human activities example, nutrient cycling) or appreciably altered the structure (for example, species composition) of the system. An unhealthy aquatic ecosystem is one where the natural state is out of halance.

Source Environment Canada

development indicators for tracking issues of importance to Canadians. The Fresh Water Quality Monitoring program played a key role in developing the CESI water quality indicator. Together with 21 other water quality monitoring programs operated by various levels of government and water boards, the Fresh Water Quality Monitoring program contributes data for the CESI water quality indicator.

2.14 The CESI water quality indicator is intended to provide an overall measure of the ability of water bodies to support aquatic life at selected monitoring sites in Canada. The indicator combines measurements of a wide range of substances found in water to reflect the general state of water quality. It focuses on how suitable the water is for plants and animals. Measurements for the indicator are taken at sites across Canada. According to Environment Canada's April 2009 report on the water quality indicator, there is no integrated national network of water quality monitoring sites designed to report on the state of Canada's water quality, or to comprehensively cover all geographic areas with potential water quality issues.

Monitoring the quantity of surface fresh water

- 2.15 Environment Canada's National Hydrometric Program collects, interprets, and disseminates data and information on surface water quantity. The program has operated continuously as the Water Survey of Canada since 1908. Environment Canada assumed responsibility for the program in the early 1970s. The program objective is to provide Canadians and their institutions with the hydrological data, information, and knowledge they need to make water management decisions.
- **2.16** The program operates 2,107 water level and/or stream flow stations under arrangements with the provinces and territories. It also has arrangements with the private sector (Exhibit 2.3).
- 2.17 Hydrometric information has many uses in Canada, including
 - in hydroelectric power generation, irrigation, and industrial and infrastructure planning, design, and operation;
 - in aquatic ecosystem and climate change research, and environmental impact studies;
 - by water boards (including the Prairie Provinces Water Board) and the International Joint Commission to determine compliance with water allocation arrangements;
 - in negotiating inter-jurisdictional water sharing and water management arrangements;

Water quality was rated as "fair," "marginal," or "poor" at 61 percent of monitoring sites; and "excellent" or "good" at 39 percent of sites from 2005 to 2007.

Source: Environment Canada

- by various levels of government for the enforcement of regulations; and
- for calibrating and validating mathematical models used to predict water levels and flow.
- 2.18 The National Hydrometric Program is managed by the Meteorological Service of Canada's Weather and Environmental Monitoring Program. Since 2007, the quality management system of the Department's weather and environmental services function has been certified under the International Organization for Standardization's (ISO's) 9001 standard.
- 2.19 Spending for the National Hydrometric Program in the fiscal year 2009–10 was \$20.9 million or 2.1 percent of departmental spending. In addition, \$13.9 million was cost-recovered through arrangements with the provinces, other federal departments, and the private sector. The number of full-time equivalent staff was 258. Water quantity monitoring equipment represents 7.7 percent of the Department's assets. The program's budget has increased by just over 50 percent from the fiscal year 2006–07 to 2009–10. Program management told us that the increase was largely due to investments in monitoring technology.



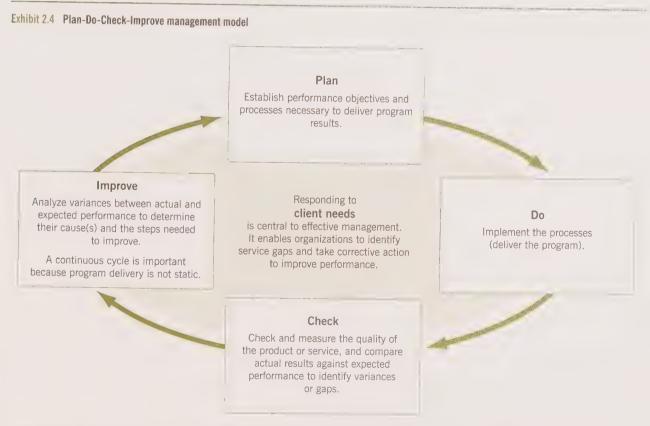
Exhibit 2.3 Location of hydrometric monitoring stations

Source: Environment Canada, National Hydrometric Program, 2010

Surface fresh water and groundwater— Surface fresh water flows in streams, rivers, lakes, and wetlands. Groundwater is found beneath the earth's surface.

Focus of the audit

- **2.20** The audit examined whether Environment Canada managed the Fresh Water Quality Monitoring program and the National Hydrometric Program to adequately monitor and report on **surface fresh water** quality and quantity in Canada.
- **2.21** We did not audit the Department's water quality and quantity research activities, biological monitoring activities, or short-term water quality surveillance activities carried out under the Pesticide Science Fund, the Chemicals Management Plan, or the Mercury Science Program of the Clean Air Regulatory Agenda. We also did not audit the management of federal groundwater or precipitation monitoring programs.
- **2.22** We assessed the management of the two surface water monitoring programs using the "Plan-Do-Check-Improve" model (Exhibit 2.4). Given the cyclical nature of these management activities, our audit covered six fiscal years from 2004–05 to 2009–10; we judged this period sufficient to allow for a complete management cycle.



Source: Adapted from the Deming Cycle, used in business improvement and quality management and the Management Accountability Framework, Treasury Board of Canada Secretariat, 2009

2.23 More details about the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Management of water monitoring programs

- 2.24 Well-managed programs strive for continuous improvement and operate according to a systematic management cycle consisting of planning, doing, checking, and improving. In examining Environment Canada's Fresh Water Quality Monitoring program and its National Hydrometric Program, we looked for evidence that
 - the programs were planned to address key risks and user needs;
- plans were implemented;
 - progress on the plans was periodically checked to ensure that risks were addressed and user needs were met; and
 - action was taken to make improvements where required, with the aim of ensuring the achievement of program objectives.

The Department has not fully defined the extent of its water monitoring responsibilities

- 2.25 To effectively plan and manage a program, it is essential to clearly define the program's objectives. For long-term water monitoring programs, the geographic extent of monitoring should be clearly established as part of the planning process so that relevant risks and monitoring priorities can be identified. Since Environment Canada manages the federal government's long-term national surface water monitoring programs, we examined whether the Department, in consultation with other jurisdictions and other federal departments and agencies, had defined the geographic extent of water monitoring to be carried out by each program.
- 2.26 Monitoring arrangements. We found that the National Hydrometric Program had clearly established its responsibilities for monitoring international boundary and interprovincial/territorial waters through formal monitoring arrangements. The National Hydrometric Program has been carried out under formal cost-sharing arrangements between Environment Canada and each of the provinces, and between Environment Canada and Indian and Northern Affairs Canada (representing the Northwest Territories and Nunavut).
- 2.27 We found that the Fresh Water Quality Monitoring program has not established water quality monitoring arrangements with most of

the provinces and does not have arrangements to monitor water quality in the territories. The program has four active federal/provincial arrangements. It also has a number of site-specific arrangements to monitor water quality, including in the Great Lakes and the Slave River. Since it has not established a consistent set of water quality monitoring arrangements across the country, the program cannot fully capitalize on the many benefits associated with formal monitoring arrangements. According to the Department, these include

- a cooperative approach to water resource assessment;
- comparable, reliable, and accessible data across the country;
- consultation on the need for and use of data from each monitoring station;
- sharing of costs according to need; and
- the exchange of information and expertise.
- **2.28** Federal lands. In addition to international boundary and interprovincial/territorial waters, federal jurisdiction extends to federal lands. Federal lands include First Nations reserves, Canadian Forces bases, national parks, and national wildlife areas.
- 2.29 Establishing program objectives that specify what will be done by the program and where is a prerequisite for effectively planning and managing program activities. Environment Canada has run the key federal government programs for monitoring surface water quality and quantity for approximately 40 years, yet it has not delineated the extent of its management responsibilities for water monitoring on federal lands.
- **2.30** The Department has established a number of site-specific arrangements with other federal departments for monitoring water on some federal lands; however, it has not established comprehensive arrangements with other federal departments that clarify who will carry out water monitoring on federal lands.
- 2.31 Based on information provided by the Fresh Water Quality Monitoring program, we found that the program is not monitoring water quality on most of these lands (Exhibit 2.5). The Department provided us with its criteria for choosing water quality monitoring sites. However, it was unable to show how current monitoring sites on federal lands met the criteria or why some federal lands are monitored and others are not. The National Hydrometric Program could not provide us with information on the number of water quantity monitoring stations on federal lands. The Department does not know whether other federal departments may be monitoring water quality or quantity on these lands.

Exhibit 2.5 The Fresh Water Quality Monitoring program is not monitoring on most federal lands

Federal lands	Number of federal lands	Number monitored by the Fresh Water Quality Monitoring program ⁴
First Nations reserves	3,000¹ ·	12
National Parks	42 ²	31
National Wildlife Areas	54 ³	2

Source: ¹Indian and Northern Affairs Canada

²Parks Canada

³Wildlife Area Regulations

- 2.32 We found that the Department has not carried out a risk assessment to determine whether long-term monitoring on these lands is needed. Fresh Water Quality Monitoring program officials told us that they do not seek new monitoring opportunities on federal lands, but that they may establish monitoring stations when other federal departments and authorities request them.
- **2.33** Recommendation. Environment Canada should work proactively with other federal departments and authorities to
 - determine where on federal lands water quality and quantity monitoring is needed,
 - determine who will carry out the long-term monitoring at these locations, and
 - formalize arrangements with other federal departments and authorities to clarify roles and responsibilities for long-term water monitoring on federal lands.

The Department's response. Agreed. The Department will update the inventory of federal lands and waters of federal interest under its own jurisdiction by fall 2011.

The Department will also review and improve criteria used to assess water monitoring needs where appropriate and will, on an ongoing basis, continue to share information with federal stakeholders and work with them to clarify and document roles and responsibilities for long-term water quality and quantity monitoring.

⁴Environment Canada, Fresh Water Quality Monitoring program

Water monitoring activities are not risk-based

- **2.34** To ensure that Canada's fresh water resources are being conserved and protected, it is important to identify, assess, and monitor risks to water quality and quantity. Since it is not feasible to monitor conditions everywhere, a risk-based approach would enable Environment Canada to focus available resources on monitoring the activities and substances that pose the greatest risks to water quality and quantity.
- **2.35** We examined whether Environment Canada applied a risk-based approach to establish its water monitoring priorities. A risk-based approach involves a number of important steps (Exhibit 2.6).

Exhibit 2.6 Steps in a risk-based approach to water monitoring

Responsibilities	Define the scope of responsibilities to be managed by the program.
Needs and risks	Identify and assess client needs and key risks within the scope of the program.
Performance gaps	Identify performance gaps by assessing current program activities in relation to the identified responsibilities, needs, and risks.
Priorities	Establish and rank program priorities for action.
Action plan	Develop and implement an action plan to close the performance gaps.

Source: Adapted from Treasury Board of Canada Secretariat, Integrated Risk Management Framework, 2001 and Treasury Board of Canada Secretariat, Management Accountability Framework, 2009

- 2.36 Both programs have periodically undertaken some of the steps identified above. For example, in 2004 the National Hydrometric Program identified some gaps in its long-term monitoring network. These included not assessing wastewater disposal from major industries for the impact on water availability downstream, and not enhancing long-term monitoring of climate change impacts on water in northern Canada.
- 2.37 With respect to monitoring climate change impacts, in 1999, the National Hydrometric Program identified 255 of its existing monitoring stations best suited to provide information on climate change trends. However, we found that the program did not establish new monitoring stations, adjust its long-term monitoring activities, or set monitoring priorities based on climate change or other threats to water quantity that it had identified. According to the Department, it has not expanded its monitoring network to track the effects of climate change because of the scientific complexities of doing so.

- 2.38 Similarly, in 2001, the Department identified a number of inadequately monitored substances that posed threats to human and aquatic ecosystem health. They included toxins produced by algae (Case Study on Lake Winnipeg), pollutants from activities such as oil sands mining (Case Study on oil sands development), and endocrine-disrupting substances. We found that these threats to water quality were not prioritized, and no action plans were developed to address them.
- 2.39 Fresh Water Quality Monitoring program officials told us that the Department's short-term research and surveillance activities address some identified threats to water quality. However, we found no systematic link during the period covered by our audit between the program's short-term research and surveillance activities and changes to long-term water quality monitoring activities intended to provide information on the status of Canada's lakes and rivers and on trends in aquatic ecosystem health.

Case Study—Environment Canada has insufficient data to monitor Lake Winnipeg pollution

Lake Winnipeg's watershed extends across several Canadian provinces and areas of the United States. It includes the Red River, which crosses the international border, as well as the Saskatchewan, Winnipeg, and Assiniboine rivers and their tributaries.

The lake plays a critical role in commercial and sport fisheries, tourism, and recreation. As home to Manitoba's largest commercial fishery, it contributes substantially to the region's economy. The total value of commercial fish production on Lake Winnipeg was over \$20 million in the 2001–02 fiscal year. Lake-based tourism contributes an estimated \$100 million a year to the province's gross domestic product.

For more than 30 years, there have been suspicions that nutrient loading from agricultural activities posed a threat to the lake, including its fish and fish habitat. Although Environment Canada monitors water quality on major tributaries that drain into Lake Winnipeg, it did not begin long-term water quality monitoring in Lake Winnipeg until 2006, one year after the Government of Manitoba recommended collaboration with the federal government to address water quality issues in the lake. The Department's long-term water quality monitoring was inadequate to signal this emerging threat.

Costly remedial measures are now under way to mitigate the problem of excess algae caused by nutrient loading. The March 2007 federal budget committed \$7 million to respond to the problem in Lake Winnipeg. An additional \$11 million of federal funds has since been allocated for cleaning up the lake, increasing understanding of nutrients in its water, and expanding and improving the network of water monitoring sites in the basin. Through these measures, the federal government aims to reduce blue-green algae levels, restore the ecological integrity of the lake, ensure a sustainable fishery, and reduce beach closures.

The Fresh Water Quality Monitoring program has recently increased its surveillance activities in the Lake Winnipeg basin. However, Environment Canada informed us that it is still in the process of evaluating the water quality monitoring network and that it is too early to know whether the network is capable of monitoring how effective cleanup activities will be in reducing nutrient loading in the lake.



Excess algae in Lake Winnipeg, Manitoba
Photo: Lori Volkart

2.40 We found that neither program has applied a risk-based approach to establish its monitoring activities. As a consequence, there may be significant risks to the quality and quantity of fresh water that have not been assessed and are not being monitored in areas of federal jurisdiction. Water management decisions may be made without long-term data and information on the quantity and quality of water resources (Case Study on threats related to population growth and economic development).

Case Study—Environment Canada has insufficient data to monitor oil sands development

Alberta's oil sands cover roughly 140,200 square kilometres in the Athabasca River, Cold Lake, and Peace River regions in the province. The first large-scale oil sands commercial operation began in 1967. Studies have suggested that oil sands mining has environmental impacts as a result of freshwater use and pollutant releases. Environment Canada recently identified the oil sands region as a priority ecosystem and hotspot for further assessment and intervention. At the time of our audit, the Department had one long-term water quality monitoring station located on the Athabasca River in Wood Buffalo National Park, about 150 kilometres downstream from the oil sands. The provincial government and private sector monitor water quality in this region, but their data is not available in the Department's regional long-term water quality database.

Environment Canada's water quality monitoring station in Wood Buffalo National Park has been in place upstream from the First Nations community of Fort Chipewyan since 1989. The station was originally established to track the long-term status and trends of nutrients in the river that could be affected by pulp and paper production.

In 2009, the Department issued a report on water quality status and trends in Wood Buffalo National Park. The report recommended expanding the monitoring parameters to include pollutants related to oil sands development. At the time of our audit, the Department was still considering their recommendation. Consequently, the Department's Fresh Water Quality Monitoring program has no baseline measures or long-term data to track changes in water quality and aquatic ecosystem health in the river associated with oil sands development.

With regard to water quantity, the Department has not determined whether it currently has an adequate number of stations to monitor water flow related to oil sands development.



Oil sands operation, Alberta Photo: Louis Helbig

Case Study—Environment Canada has insufficient data to monitor threats related to

Key threats to the quality and quantity of Canada's freshwater resources are related to population growth and economic development. Between 2001 and 2006, the population growth rate in many mid-sized urban centres of northern Alberta and the Northwest Territories was the highest in Canada. Economic development patterns were similar for these regions, with the Northwest Territories and Yukon experiencing some of Canada's highest growth rates in the mining and oil and gas extraction sectors from 2002 to 2008.

During the period covered by our audit, the Department's long-term water quality and quantity monitoring networks have not responded to this growth. There is limited monitoring in the northern parts of most provinces and in the territories. As a result, Environment Canada has insufficient data to monitor threats related to population growth and economic development in regions experiencing the highest growth.

- 2.41 With Canada's participation, the World Meteorological Organization (WMO) has developed guidelines for the optimum number of water monitoring stations per square kilometre. The number of stations recommended under the guidelines varies by terrain type. We found that neither federal water monitoring program had assessed whether its network meets WMO guidelines.
- **2.42** A risk-based approach is needed to focus available monitoring resources on activities and substances that pose the greatest risks to water quality and quantity.
- **2.43** Recommendation. Using the 2008 World Meteorological Organization guidelines for water monitoring networks as a benchmark, Environment Canada should
 - determine the optimum number of water monitoring stations across Canada;
 - · identify gaps in its existing coverage; and
 - apply a risk-based approach to establish new monitoring stations, focusing on activities and substances that pose the greatest risks to water quality and quantity.

The Department's response. Agreed. The Department will use the 2008 World Meteorological Organization (WMO) guidelines for water monitoring networks as a benchmark and will continue to consider them and other benchmarks (for example, the U.S. Geological Survey) whenever appropriate.

The Department will re-evaluate the current network density in accordance with recent WMO guideline for various physiographic regions across Canada and assess the implications by spring 2012.

The Department will continue to apply, and will enhance and document on a national basis, a risk-based approach based on the analysis of the scientific results of its surveillance programs, its Canadian Aquatic Biological Monitoring Program, and its aquatic ecosystem monitoring programs to improve its long-term water quality monitoring.

Water monitoring arrangements are sometimes fulfilled

2.44 We also examined whether the two programs carried out water quality and quantity monitoring activities in accordance with the Department's monitoring arrangements. For each program, we randomly selected 10 monitoring sites within each of three provinces to determine whether monitoring occurred at the specified frequency.

We reviewed site data collected over five fiscal years, from 2004–05 to 2008–09. We also examined whether the Fresh Water Quality Monitoring program monitored core parameters recommended by the Canadian Council of Ministers of the Environment (CCME) and identified in the water monitoring arrangements.

- **2.45** For the National Hydrometric Program we found that monitoring activities for the stations we selected were carried out in accordance with two of the three water monitoring arrangements we examined. Since the third did not specify the frequency of station visits that should take place, we could not determine whether the actual number of visits carried out was appropriate.
- 2.46 For the Fresh Water Quality Monitoring program we found that the monitoring activities for the stations we selected were carried out as agreed in two provinces. Environment Canada missed 25 percent of its scheduled visits in the third province and two of the six core monitoring parameters recommended by the CCME were not consistently monitored as planned. As a result, some of the data and information considered necessary to monitor water quality in the region covered by this monitoring arrangement is not available.

The programs have not systematically assessed client needs

- 2.47 To plan activities and improve products or services, an organization needs to clearly identify its clients, understand their specific needs and expectations, and assess how well it is serving them. Responding to client needs is central to the Plan-Do-Check-Improve management model (Exhibit 2.4). This information enables the organization to identify service shortcomings or gaps and take action to improve performance. We examined whether Environment Canada
 - · periodically identified its key clients and their information needs,
 - · determined how well it was serving those needs, and
 - took action to address identified issues.
- **2.48** We found that neither program determined whether it is satisfying client needs. The National Hydrometric Program has established a National Administrators Table with federal, provincial, and territorial partners to discuss a variety of issues, including monitoring needs. However, the program has not developed or implemented action plans to address partners' monitoring needs.
- **2.49** The National Hydrometric Program has a process for periodically assessing client needs to identify shortcomings or gaps in the

information it supplies. However, the program does not use the process it has established. For example, program management informed us that they aim to hold three to four regional workshops a year to determine client needs. However, it has not convened a workshop since 2007 and has held only two regional workshops during the six-year period covered by this audit. The program did not use the results of these two workshops to develop concrete action plans or make program improvements. According to the workshop summaries, clients indicated that Environment Canada should give more attention to collecting their feedback and engaging them in information sharing.

- 2.50 The Fresh Water Quality Monitoring program has not established a process for periodically assessing client needs to identify shortcomings or gaps in the information it supplies. The program has consulted with some clients about specific bodies of water, but it has not consolidated the results regionally or nationally to determine client needs and priorities for improvement.
- 2.51 Given that we found that the Department has not systematically consulted with the clients of the programs, we surveyed clients identified by the Department to determine the extent to which the programs are addressing their information needs (Exhibit 2.7). In response to our request, Environment Canada identified clients of the National Hydrometric Program and Fresh Water Quality Monitoring program. Clients for both monitoring programs include other federal government departments and agencies; provincial, territorial, and international partners to arrangements; academics; and the private sector.
- 2.52 While approximately half of the survey respondents indicated that the monitoring data provided by the programs met their needs, our survey results indicate that clients of the National Hydrometric Program were more satisfied. Just over two-thirds of the clients who

Exhibit 2.7 Survey respondents indicate that their information needs are not always met

Federal lands	National Hydrometric Program	Fresh Water Quality Monitoring program
The data meets the users' needs	56%	43%
The users rely on the data	83%	57%
The data allows users to gain an adequate understanding of the state of water quantity/quality	71%	51%
The users indicated that key gaps exist in the information available	68%	67%

responded to our survey said that key gaps exist in the information provided by the programs. Additional information about the survey is included in **About the Audit** at the end of this chapter.

The Fresh Water Quality Monitoring program does not validate the quality of the data it disseminates

- **2.53** Quality assurance is a key aspect of program management and an important element of the Plan-Do-Check-Improve management model. It is also essential for identifying opportunities for improvement and satisfying client needs.
- 2.54 The purpose of the Fresh Water Quality Monitoring program and the National Hydrometric Program is to collect and disseminate data and information—on water quality in the case of the Fresh Water Quality Monitoring program, and on water quantity in the case of the National Hydrometric Program. In the context of data and information, quality refers to the extent to which the information is fit for its intended uses. The production and dissemination of unreliable water data is, at the least, a waste of human and financial resources, and could result in inappropriate decisions regarding urban, industrial, or agricultural expansion, water allocation; or infrastructure needs.
- **2.55** Quality assurance involves a variety of tasks aimed at enhancing the quality of the data and its adequacy for intended uses. These tasks include field work, laboratory analysis, and data validation. Data validation is a process used to determine if data are accurate and complete prior to its dissemination.
- **2.56** We examined whether the programs have put in place and applied quality assurance procedures to validate the data and information they disseminate to assure that the data and information are fit for use. We did not examine the application of other quality assurance procedures, including field and laboratory procedures, nor did we directly assess the quality of the monitoring data itself.
- 2.57 We found that the National Hydrometric Program has a national database and had established national-level quality assurance procedures to validate its data. To determine whether it had applied its quality assurance procedures to validate the data it disseminates, we selected a sample of 34 hydrometric stations from across the program's five regions. We found that the program applied its quality assurance procedures in a consistent manner at these stations. As part of its quality assurance processes, the program carries out audits to ensure that both program officials and provincial or private sector technicians who collect data are following national practices.

- 2.58 In contrast, we found that the Fresh Water Quality Monitoring program has no national database and lacks uniform procedures to assure that the quality of the data it disseminates from its regional databases is fit for its intended uses. Although each regional office has developed its own quality assurance procedures and manages its own database, at least 70 percent of the data collected in four of the five regions had not been validated since 2007. We found that the Quebec region validated the data it collected. The program does not assure the quality of data provided to it by partners such as the provinces and other federal departments. Rather, it relies on the provider to assure the quality of the data it receives. Since both the quality assurance procedures and their application are inconsistent across Canada, the Fresh Water Quality Monitoring program cannot assure that the monitoring data meets common quality standards across Canada or that it is fit for its intended uses. The program does not know whether it is disseminating good quality data and information on the state of water quality or aquatic ecosystem health.
- **2.59** Recommendation. Environment Canada should apply a quality assurance framework to assure that the data disseminated under the Fresh Water Quality Monitoring program meets common quality standards across Canada and is fit for its intended uses.

The Department's response. Agreed. The Department will complete the application of a national Quality Assurance/Quality Control data framework for the Fresh Water Quality Monitoring program by the end of 2012. The framework will build on the best practices, including regional ones, as well as Environment Canada Meteorological Service of Canada's International Organization for Standardization (ISO) quality assurance management framework for the National Hydrometric Program.

The Fresh Water Quality Monitoring program does not systematically track or communicate variances from water quality thresholds

2.60 In 2006, the Canadian Council of Ministers of the Environment (CCME) recommended a core set of water quality parameters. The Council also established thresholds to be monitored for the protection of aquatic life. Where appropriate, it recommends that officials consider site-specific conditions in selecting which parameters to monitor and in establishing thresholds. Environment Canada is a member of the working group that developed these recommendations.

- **2.61** We examined whether the Fresh Water Quality Monitoring program established a common set of core water quality parameters and tracked variances from established water quality thresholds to monitor aquatic ecosystem health, as recommended by the CCME. We also examined whether the program had a process in place to communicate variances from the established thresholds and negative trends to the appropriate authorities so that they could take corrective actions.
- **2.62** We found that the Department has selectively tracked and reported variances from established water quality thresholds in some bodies of water. However, it has not established a common set of core water quality variables related to the protection of aquatic life, as recommended by the CCME and does not systematically monitor variances from thresholds across Canada. As a result, the Department does not know how often its water quality thresholds are exceeded across Canada.
- **2.63** There is no procedure in place to ensure the communication of variances from water quality thresholds and trends in water quality so that appropriate and timely action can be taken. This means that negative trends in water quality and aquatic ecosystem health could be going undetected and unreported, with no corrective action taken.
- **2.64** Recommendation. Environment Canada should act on recommendations of the Canadian Council of Ministers of the Environment by monitoring a common set of core water quality parameters at each of its stations and communicating variances from thresholds and trends in water quality so that appropriate actions can be taken in a timely manner.

The Department's response. Agreed. The Department will continue to improve reporting of the status of water quality at the national, regional, and station level through the Canadian Environmental Sustainability Initiative (CESI) and by using the Canadian Council of Ministers of the Environment (CCME) Water Quality Index on an annual basis.

The water quality indicator uses the frequency and magnitude of exceedances of key parameters from the CCME guidelines for its assessment.

The Fresh Water Quality Monitoring program has a database that manages the program data and tracks variances so that appropriate actions can be taken in a timely manner. Environment Canada has also reported initial findings on nutrient status and trends (1990–2006) for selected long-term monitoring sites using the CESI website window.

The Fresh Water Quality Monitoring program does not measure its performance

- 2.65 Both the National Hydrometric Program and the Fresh Water Quality Monitoring program are expected to contribute to Environment Canada's broader strategic outcome of ensuring that water is clean, safe, and secure, and that aquatic ecosystems are conserved and protected. It is therefore important that both programs clearly define their expected contributions to the strategic outcome, and that they measure and report program performance relative to those expectations.
- 2.66 Assessing program performance relative to established priorities and expected results is a key feature of the cyclical Plan-Do-Check-Improve management model. Well-managed organizations measure and assess performance, learn and adjust program strategies, and report publicly on what they have accomplished. By measuring performance and assessing results, an organization can determine which strategies are working to achieve objectives and which are not.
- 2.67 To assess program performance and identify priorities for improvement, management must first identify the extent of program responsibilities, relevant risks, and client needs. It must also establish clear priorities, expected results, and action plans for achieving results.
- 2.68 We found that since the Department had not taken the initial steps to clearly establish the extent of each program's monitoring responsibilities, risk-based priorities, and client needs, it is not in a position to objectively assess the adequacy of its monitoring activities and identify opportunities for improvement. Nevertheless, we examined whether the programs had established clear priorities, expected results, and action plans for achieving them.
- 2.69 For the National Hydrometric Program we found that Environment Canada has established concrete and measurable performance expectations. For example, one of the program's objectives is that Canadians have reliable and timely access to hydrometric data and information from across Canada. In order to achieve this objective, the program has specified that it plans to assure the quality of 100 percent of its data and ensure that real-time data is available via the Internet within 24 hours.
- 2.70 For the Fresh Water Quality Monitoring program we found that while Environment Canada has established national-level performance expectations, they are not expressed in concrete, measurable terms. For example, one of the program goals is improved access to credible,

comparable data nationwide; however, the program has not defined what it means by improved access or credible data or described how it will measure progress against this goal at a national level.

2.71 We found that while the National Hydrometric Program had measured its performance relative to the program's expected results, the Fresh Water Quality Monitoring program had not. As a result, the Fresh Water Quality Monitoring program is not in a position to learn and adjust program strategies and report publicly on what was accomplished relative to expected results.

Neither program has developed or implemented action plans for program improvement

- 2.72 In the six fiscal years covered by the audit, the management of both programs drafted various proposals for adjusting monitoring activities. For example, in 2006, each program developed proposals for comprehensive national coverage. The National Hydrometric Program proposed an additional 600 stations at an incremental cost of \$7 million a year. The draft proposal prepared by the Fresh Water Quality Monitoring program set out several alternatives that ranged from adding 300 stations over five years to adding 3,300 stations (eight times the existing number) over ten years. The Department has estimated the incremental cost of the least expensive option at \$17 million a year; it estimated the incremental cost of the most expensive option at \$170 million a year. We found that no action plans were developed or implemented by the Department to address these proposals.
- 2.73 During the course of our audit, the Department completed an internal audit of the National Hydrometric Program. Its findings are consistent with the findings of our audit. For example, the internal audit report recommended that the National Hydrometric Program implement a new approach to strategic planning based on a regular assessment of strategic risk and the needs of clients and stakeholders.
- **2.74** Recommendation. Environment Canada should apply a risk-based, Plan-Do-Check-Improve model to manage its water monitoring activities by
 - clearly defining the scope of responsibilities to be managed by each program, including the extent to which each program will carry out monitoring activities on federal lands;
 - identifying client needs and key risks to be addressed by each program;

- identifying performance gaps by assessing current program activities relative to identified client needs and risks;
- · establishing and ranking program priorities; and
- developing and implementing an action plan to close identified performance gaps.

The Department's response. Agreed. The Department will continue its current application of nationally ISO-certified performance measurement principles (Plan-Do-Check-Improve) to water quantity monitoring and incorporate best regional practices into departmental water quality monitoring activities across the country.

The Department will continue to engage and share information and best practices with federal partners annually through the National Administrators Table, as well-as through bilateral discussions with federal partners.

Reporting on results

Environment Canada has not fulfilled its reporting obligations under the Canada Water Act

2.75 Under the Canada Water Act, Environment Canada is required to prepare an annual report to Parliament "on the operations under this Act." We found that, from 2004 to 2009, the Department did not submit annual reports to Parliament as required under the Act. For example, the reports for the period 2006 to 2009 were submitted in 2010. The report for the year ending 31 March 2010 has yet to be submitted to Parliament. In addition, departments are required to submit annual departmental performance reports to Parliament on the performance of their programs. We found that information on key aspects of program performance and results for these two programs were not included in Environment Canada's Departmental Performance Reports.

Conclusion

2.76 The National Hydrometric Program has established clear program objectives and expected results, and has entered into arrangements with each province and territory to monitor water quantity. The Program has established a national database, and has applied common quality control procedures at the stations we examined to assure that the data it collects and disseminates is of consistently high quality and fit for its intended uses.

- 2.77 Neither the Fresh Water Quality Monitoring program nor the National Hydrometric Program was well managed to adequately monitor and report on the quality and quantity of Canada's surface fresh water resources. Many of the essential management practices needed to do so have not been put in place by either program. The Department has not defined the extent of its water monitoring responsibilities. Neither program has applied a systematic, risk-based approach to plan, implement, check, and improve its water monitoring activities, and neither program has determined whether it is satisfying client needs or has developed and implemented action plans for program improvement.
- 2.78 Consequently, Environment Canada does not know whether the greatest risks to water quality and quantity are being monitored. Canadians need water data and information for many purposes, such as determining the environmental impacts of projects; understanding emerging threats, including climate change and the cumulative effects of economic development; and guiding decisions associated with federal water arrangements and regulations, as well as energy, agriculture, industrial, and urban development. At present good quality data and information may not be available when and where it is needed.
- 2.79 In the absence of timely reports on how well these programs are achieving their objectives parliamentarians and the public do not know the status of Canada's rivers and lakes, whether Canada's water resources are being protected and conserved, or whether aquatic ecosystem health is improving, deteriorating, or staying the same. In the absence of client surveys, risk analysis, and assessments of the adequacy of its monitoring activities, the Department has no objective basis upon which to take corrective actions to improve these programs.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objectives

The overall objective of this audit was to determine whether Environment Canada's Fresh Water Quality Monitoring program and its National Hydrometric Program were well managed to adequately monitor and report on surface fresh water quality and quantity in Canada.

The audit objectives for the two lines of enquiry were as follows:

- Determine whether Environment Canada applied a risk-based approach to plan, implement, check, and improve its Fresh Water Quality Monitoring program and its National Hydrometric Program.
- Determine whether Environment Canada measured and reported on the progress of the Fresh Water Quality Monitoring program and the National Hydrometric Program in achieving their planned results.

Scope and approach

The audit focused on Environment Canada's long-term surface water quality and quantity monitoring programs: the Fresh Water Quality Monitoring program and the National Hydrometric Program. The audit examined the programs' risk-based management, as well as results measurement and reporting. We examined the programs' management according to the "Plan-Do-Check-Improve" management model.

We did not audit the Department's water quality and quantity research activities, biological monitoring activities, or short-term water quality surveillance activities. In addition, we did not audit the management of groundwater or precipitation monitoring programs.

During our audit, we interviewed officials at Environment Canada, including staff of the five regional offices. A main objective of the interviews was to identify documentation relevant to the audit. We also conducted an online survey of clients identified by the Department to determine the extent to which the information generated by its two monitoring programs met clients' needs. We contacted 1,464 clients who were available between 22 April and 7 May 2010. The response rate for the survey was 32 percent.

Criteria

To determine whether Environment Canada applies a risk-based approach to plan, implement, check, and improve its Fresh Water Quality Monitoring program and its National Hydrometric Program, we used the following criteria:

Criteria	• Management Accountability Framework, Areas of Management, section 2, Treasury Board of Canada Secretariat, 2009	
Environment Canada defines the planned results of the Fresh Water Quality Monitoring program and the National Hydrometric Program in concrete, measurable terms.		
Environment Canada applies a risk-based approach to identify the Fresh Water Quality Monitoring program's and the National	Risk Management Policy, Identification and Minimization, Treasury Board of Canada Secretariat, 2001	
Hydrometric Program's priorities for monitoring.	Integrated Risk Management Framework, Element 1, Developing the Corporate Risk Profile, Treasury Board of Canada Secretariat, 2001	
	Management Accountability Framework, Areas of Management, section 9, Treasury Board of Canada Secretariat, 2009	
Environment Canada identifies the information needs of key users of the Fresh Water Quality Monitoring program and the National Hydrometric Program.	Management Accountability Framework, Areas of Management, section 20, Treasury Board of Canada Secretariat, 2009	
Environment Canada establishes monitoring activities for the Fresh Water Quality Monitoring program and the National Hydrometric Program based on identified risks and priorities.	 Integrated Risk Management Framework, Element 2, Establishing an Integrated Management Function, and Element 3, Practising Integrated Risk Management, Treasury Board of Canada Secretariat, 2001 	
	Risk Management Policy, Minimization and Containment, Treasury Board of Canada Secretariat, 2001	
	 Management Accountability Framework, Areas of Management, section 9, Treasury Board of Canada Secretariat, 2009 	
	• Canada Water Act, sections 4 and 5	
nvironment Canada applies a quality assurance framework to the Fresh Water Quality Monitoring program and the National	Policy on Information Management, section 5.2.1, Treasury Board of Canada Secretariat, 2007	
Hydrometric Program data.	Quality Assurance Framework, Six Dimensions of Information Quality, Statistics Canada, 2002	
	 Quality Framework and Guidelines for Statistical Activities, section 1.1, Organisation for Economic Co-operation and Development, 2003 	
	Federal/provincial water quality and hydrometric monitoring arrangements	
nvironment Canada assesses the adequacy of monitoring civities by the Fresh Water Quality Monitoring program and the	Risk Management Policy, Compensation, restoration and recovery, Treasury Board of Canada Secretariat, 2001	
lational Hydrometric Program, and identifies areas for nprovement.	Management Accountability Framework, Areas of Management, sections 6 and 8, Treasury Board of Canada Secretariat, 2009	

To determine whether Environment Canada applies a risk-based approach to plan, implement, check, and improve its Fresh Water Quality Monitoring program and its National Hydrometric Program, we used the following criteria (continued):

Ouitorio	Sources	
Criteria	3001003	
Environment Canada took corrective action to improve the Fresh Water Quality Monitoring program's and the National	Risk Management Policy, Compensation, restoration and recovery, Treasury Board of Canada Secretariat, 2001	
Hydrometric Program's monitoring activities in areas identified in an assessment.	Integrated Risk Management Framework, Element 4, Ensuring Continuous Risk Management Learning, Treasury Board of Canada Secretariat, 2001	
	Management Accountability Framework, Areas of Management, sections 6 and 8, Treasury Board of Canada Secretariat, 2009	
	ts on the progress of the Fresh Water Quality Monitoring program eir planned results, we used the following criteria:	
Criteria		
CHGHA	Sources	
Environment Canada regularly measures the performance of the Fresh Water Quality Monitoring program and the National Hydrometric Program against their planned results.	Policy on Active Monitoring, Policy Objectives and Results, and Departmental Roles and Responsibilities, Treasury Board of Canada Secretariat, 2009	
Environment Canada regularly measures the performance of the Fresh Water Quality Monitoring program and the National	Policy on Active Monitoring, Policy Objectives and Results, and Departmental Roles and Responsibilities, Treasury Board	
Environment Canada regularly measures the performance of the Fresh Water Quality Monitoring program and the National	 Policy on Active Monitoring, Policy Objectives and Results, and Departmental Roles and Responsibilities, Treasury Board of Canada Secretariat, 2009 Management Accountability Framework, Areas of Management, section 7, Treasury Board of Canada 	
Environment Canada regularly measures the performance of the Fresh Water Quality Monitoring program and the National	 Policy on Active Monitoring, Policy Objectives and Results, and Departmental Roles and Responsibilities, Treasury Board of Canada Secretariat, 2009 Management Accountability Framework, Areas of Management, section 7, Treasury Board of Canada Secretariat, 2009 Federal/provincial water quality and hydrometric monitoring 	

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

Program.

The audit covered the fiscal years from 2004–05 to 2009–10. This period was chosen because we considered this time frame to be sufficient for examining the "Plan-Do-Check-Improve" management cycle.

Audit work for this chapter was substantially completed on 30 June 2010.

 Management Accountability Framework, Areas of Management, section 7, Treasury Board of Canada

Secretariat, 2009

Audit team

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 2. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Response Recommendation Management of water monitoring programs Agreed. The Department will update the inventory of federal 2.33 Environment Canada should lands and waters of federal interest under its own jurisdiction by work proactively with other federal departments and authorities to fall 2011. • determine where on federal lands The Department will also review and improve criteria used to water quality and quantity assess water monitoring needs where appropriate and will, on an ongoing basis, continue to share information with federal monitoring is needed, stakeholders and work with them to clarify and document roles • determine who will carry out the and responsibilities for long-term water quality and quantity long-term monitoring at these monitoring. locations, and formalize arrangements with other federal departments and authorities to clarify roles and responsibilities for long-term water monitoring on federal lands. (2.25-2.32) 2.43 Using the 2008 World Agreed. The Department will use the 2008 World

2.43 Using the 2008 World Meteorological Organization guidelines for water monitoring networks as a benchmark, Environment Canada should

- determine the optimum number of water monitoring stations across Canada;
- identify gaps in its existing coverage; and
- apply a risk-based approach to establish new monitoring stations, focusing on activities and substances that pose the greatest risks to water quality and quantity. (2.34–2.42)

Agreed. The Department will use the 2008 World Meteorological Organization (WMO) guidelines for water monitoring networks as a benchmark and will continue to consider them and other benchmarks (for example, the U.S. Geological Survey) whenever appropriate.

The Department will re-evaluate the current network density in accordance with recent WMO guideline for various physiographic regions across Canada and assess the implications by spring 2012.

The Department will continue to apply, and will enhance and document on a national basis, a risk-based approach based on the analysis of the scientific results of its surveillance programs, its Canadian Aquatic Biological Monitoring Program, and its aquatic ecosystem monitoring programs to improve its long-term water quality monitoring.

Recommendation

2.59 Environment Canada should apply a quality assurance framework to assure that the data disseminated under the Fresh Water Quality Monitoring program meets common quality standards across Canada and is fit for its intended uses. (2.53–2.58)

2.64 Environment Canada should act on recommendations of the Canadian Council of Ministers of the Environment by monitoring a common set of core water quality parameters at each of its stations and communicating variances from thresholds and trends in water quality so that appropriate actions can be taken in a timely manner. (2.60–2.63)

- 2.74 Environment Canada should apply a risk-based, Plan-Do-Check-Improve model to manage its water monitoring activities by
- clearly defining the scope of responsibilities to be managed by each program, including the extent to which each program will carry out monitoring activities on federal lands;
- identifying client needs and key risks to be addressed by each program;
- identifying performance gaps by assessing current program activities relative to identified client needs and risks;

Response

Agreed. The Department will complete the application of a national Quality Assurance/Quality Control data framework for the Fresh Water Quality Monitoring program by the end of 2012. The framework will build on the best practices, including regional ones, as well as Environment Canada Meteorological Service of Canada's International Organization for Standardization (ISO) quality assurance management framework for the National Hydrometric Program.

Agreed. The Department will continue to improve reporting of the status of water quality at the national, regional, and station level through the Canadian Environmental Sustainability Initiative (CESI) and by using the Canadian Council of Ministers of the Environment (CCME) Water Quality Index on an annual basis.

The water quality indicator uses the frequency and magnitude of exceedances of key parameters from the CCME guidelines for its assessment.

The Fresh Water Quality Monitoring program has a database that manages the program data and tracks variances so that appropriate actions can be taken in a timely manner. Environment Canada has also reported initial findings on nutrient status and trends (1990–2006) for selected long-term monitoring sites using the CESI website window.

Agreed. The Department will continue its current application of nationally ISO-certified performance measurement principles (Plan-Do-Check-Improve) to water quantity monitoring and incorporate best regional practices into departmental water quality monitoring activities across the country.

The Department will continue to engage and share information and best practices with federal partners annually through the National Administrators Table, as well as through bilateral discussions with federal partners.

Recommendation

Response

- establishing and ranking program priorities; and
- developing and implementing an action plan to close identified performance gaps. (2.65–2.73)

Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—Fall 2010

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Report of the
Commissioner of the
Environment and
Sustainable Development
to the House of Commons

FALL

Chapter 3
Adapting to Climate Impacts



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Report of the

Commissioner of the Environment and Sustainable Development

to the House of Commons

FALL

Chapter 3
Adapting to Climate Impacts



The Fall 2010 Report of the Commissioner of the Environment and Sustainable Development comprises The Commissioner's Perspective, Main Points—Chapters 1 to 3, an appendix, and four chapters. The main table of contents for the Report is found at the end of this publication.



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Chapter

Adapting to Climate Impacts



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Adapting to Climate Impacts

Main Points

What we examined

Government reports have demonstrated that climate change affects all regions of the country and a wide range of economic sectors. These impacts and the need to adapt to them touch on virtually all federal government portfolios, with significant implications for policies and programs related to Canadians' health and the country's industry, infrastructure, and ecosystems. The federal government is well positioned to help Canadians reduce their exposure to risks from climate change by providing them with information on impacts and adaptive measures.

We examined five key federal departments whose mandates are affected significantly by climate change—Environment Canada, Natural Resources Canada, Health Canada, Indian and Northern Affairs Canada, and Fisheries and Oceans Canada. We looked at whether the departments are identifying and assessing the risks posed by climate change in their areas of responsibility. We also looked at whether they are taking steps to adapt to the risks by considering them in their planning and decision making.

We looked at four climate change adaptation programs in these departments to determine whether they have collected and disseminated information in a usable way to those who need the information—for example, other federal departments, provinces and territories, Aboriginal communities, municipalities, industry sectors, non-governmental organizations, and academics.

Audit work for this chapter was substantially completed on 8 June 2010.

Why it's important

The health of Canadians and Canada's natural environment, communities, and economy are vulnerable to the impacts of a changing climate. Some of these impacts are already occurring from coast to coast. They are most evident in Canada's North where, for example, the thawing of permafrost as a result of temperature increases is affecting the stability of roads, buildings, pipelines, and other infrastructure.

Adapting to actual or expected changes in climate involves adjusting our decisions, activities, and thinking. These adjustments are essential both to minimize adverse effects and to take advantage of new and beneficial opportunities. The government acknowledges that climate change is inevitable and that we must adapt to its impacts in order to reduce their severity.

What we found

- The government has not established clear priorities for addressing the need to adapt to a changing climate. Although the government committed in 2007 to produce a federal adaptation policy to assist it in establishing priorities for future action, there is still no federal adaptation policy, strategy, or action plan in place. Departments therefore lack the necessary central direction for prioritizing and coordinating their efforts to develop more effective and efficient ways of managing climate change risks.
- Overall, the departments we examined have not taken concrete
 actions to adapt to the impacts of a changing climate. With few
 exceptions, they have yet to adjust or develop policies and practices to
 better respond to the risks. However, Fisheries and Oceans Canada,
 Natural Resources Canada, Health Canada, and Environment
 Canada have taken the first steps of risk management by completing
 assessments of the risks to their mandate areas from climate change,
 and they have prioritized the risks. Indian and Northern Affairs
 Canada has initiated but not yet completed a department-wide
 assessment of climate change risks it must manage.
- The four programs we examined have shared information on climate impacts and adaptation in a manner that responds to the needs of their specific clients, stakeholders, and partners. However, the programs cannot meet the increasing demand for information. Funding for adaptation programs under the Clean Air Agenda is scheduled to end in March 2011, and there is no plan in place to address ongoing needs after that date.

The departments have responded. The departments agree with all of the recommendations addressed to them. Their detailed responses follow the recommendations throughout the chapter.

Introduction

Adapting to actual or expected changes in climate involves Climate change—Any change in climate over adjusting our decisions, activities, and thinking. Making these time, whether it is the product of natural factors, adjustments is central to both minimizing the adverse effects of these human activity, or both. changes, and taking advantage of any new and beneficial opportunities. Adaptation—The adjustment in natural or The government acknowledges that climate change is inevitable due to

past and ongoing emissions of greenhouse gases, and that therefore adaptation to the impacts is essential.

The impacts of a changing climate

In 2007, the Intergovernmental Panel on Climate Change (IPCC) provided the most comprehensive and up-to-date global scientific assessment of the impacts of climate change, the vulnerability of natural and human environments, and the potential for response through adaptation. The IPCC concluded that warming of the climate system is unequivocal. It also concluded that there is a very high level of confidence (at least 90 percent probability) that natural and biological systems are being affected by the changing climate. Negative effects include increasing ground instability in permafrost regions, shifts in ranges of plant and animal species, earlier migrations of fish in rivers due to rising water temperatures, and warming of lakes and rivers in many regions with effects on water quality. Exhibit 3.1 provides further detail about how climate change is expected to affect water resources in different regions of Canada.

expected climatic stimuli or their effects.

Intergovernmental Panel on Climate

Change—A scientific body established under the United Nations Environment Programme and and socio-economic information produced worldwide relevant to the understanding of

Exhibit 3.1 Expected effects of climate change on freshwater resources

More frequent water shortages are among the most serious climate risks. In Canada's Prairies, lower river flows are projected for the summer when demand for surface water is greatest. For example, average annual flows of the Red Deer, Bow, Oldman. and South Saskatchewan rivers are all expected to decline due to climate change. In the case of the Red River, the decline is expected to be as much as 13 percent by the year 2050.

Many regions of British Columbia are projected to experience increasing water shortages due to shrinking glaciers, declining snow-packs, changes in the timing and amount of precipitation, and prolonged drought. The Okanagan watershed will have earlier peaks in spring snowmelt, with reduced summer stream flows and increased winter stream flows. Similar changes are foreseen for the Columbia River.

In southern Ontario, communities in areas such as Durham County, Waterloo County, Wellington County, and southern Georgian Bay are becoming more vulnerable to water shortages due to higher summer temperatures combined with population growth. Water levels in the Great Lakes are projected to continue to drop. This means that communities accessing water from the Great Lakes may experience problems from more frequent low water levels.



Dry docks and low water levels on Georgian Bay,

Photo: Karl Schiefer

Source: Adapted from Natural Resources Canada report From Impacts to Adaptation: Canada in a Changing Climate 2007.

Risk—The expression of the likelihood and impact of a future event that can affect an organization's ability to achieve its objectives. Assessing risks is one way to manage outcomes in the face of uncertainty.

Vulnerability—The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate o climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.



Flooding in Peterborough, Ontario, July 2004, after an intense rain storm Photo: Ontario Ministry of Natural Resources

- 3.3 Canada ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and, under that framework, also ratified the Kyoto Protocol in 2002. Among other things, the framework and the protocol commit signatories to cooperate in preparing for adaptation to the adverse effects of climate change. As a party of the UNFCCC, Canada also committed to support adaptation through decisions made under the Bali Action Plan; the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change; and the Buenos Aires Programme of Work. As a member of the G8, Canada has declared that adaptation to the impacts of climate change is a high priority for all nations.
- 3.4 The government has also produced a series of reports identifying the risks posed by a changing climate and the need to take adaptation measures. In 1998, Environment Canada published The Canada Country Study: Climate Impacts and Adaptation. The study concluded that Canadians need to be well informed when preparing to respond to the potential impacts of climate change. The government's climate change plans of 2000, 2002, and 2005 also recognized the need to take action on adaptation. In 2008, the government published two more reports that assessed vulnerabilities, impacts, and potential adaptation measures across the country. Exhibit 3.2 illustrates in a timeline that climate change and the need to adapt to its impacts have been of concern to the government, both nationally and internationally, since the early 1990s.

Two key vulnerability assessments on climate impacts and risks for Canada

- 3.5 Building on the Canada Country Study, Natural Resources Canada led the development of the report From Impacts to Adaptation: Canada in a Changing Climate 2007. The assessment identified major impacts in regions across Canada, including
 - damage to infrastructure in the North from changes in permafrost;
 - ecological and socio-economic losses in Atlantic Canada's coastal communities due to accelerated erosion and more extensive flooding from rising sea levels and more frequent storms;
 - increasing stress in British Columbia's fisheries from rising water temperatures and in its forest industry from more severe pest infestations and fires; and
 - more frequent drought, wildfires, and severe floods in the Prairies.

Exhibit 3.3 provides further detail about how climate change is expected to affect forest resources in different regions of Canada.

Exhibit 3.2 Governments have been concerned with the need to adapt to climate change since the early 1990s

International commitments and reports

The Copenhagen Accord commits Canada and other developed countries to providing adequate, predictable, and sustainable financial resources, technology, and capacity building to support adaptation in developing countries.

One objective of the Bali Action Plan is to enhance action on adaptation, including international cooperation on urgent actions, risk management and reduction, disaster reduction, and economic diversification to build resilience.

The Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change (2005–2010) is established.

The Buenos Aires Programme of Work on Adaptation and Response Measures supports building institutional capacity for preventing, planning and preparing for, and managing disasters related to climate change, in particular for droughts, floods, and extreme weather.

Domestic plans, actions, and reports

• A Government of Canada adaptation policy framework was to be in place by the end of 2008.

 Release of two federal reports: From Impacts to Adaptation, Canada in a Changing Climate 2007; and Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity.

The federal \$1.9 billion Clean Air Agenda allocates \$85.9 million to adaptation over four years.

 Project Green: Moving Forward on Climate Change calls for adaptation strategies to minimize the risks to quality of life.

 The National Climate Change Adaptation Framework is developed by a federal/provincial/territorial working group but not adopted as federal policy, and no official follow-up has been made.

 The Climate Change Plan for Canada notes that impacts of climate change are already being felt and proposes that collaboration among governments, academics, and the private sector on adaptation continue.

 Canada ratifies the Kyoto Protocol, which is in effect until 2012.

Government of Canada Action Plan 2000 on Climate Change notes the need to improve understanding of the impacts of climate change and ways to adapt.

The Canada Country Study: Climate Impacts and Adaptation is the first national assessment on climate impacts and adaptation.

The Kyoto Protocol under the United Nations Framework Convention on Climate Change (UNFCCC) is adopted, requiring all parties to formulate, implement, publish, and regularly update national and regional programs containing measures to facilitate adequate adaptation to climate change.

The United Nations Framework Convention on Climate Change (UNFCCC) is adopted, requiring that all parties develop national and regional programs to facilitate adequate adaptation to climate change.

The First Assessment Report by the Intergovernmental Panel on Climate Change includes a volume on Impacts Assessment of Climate Change, and Response Strategies. Reports are later released in 1995, 2001, and 2007.

Canada signs and ratifies the UNFCCC.

1990

Exhibit 3.3 Expected effects of climate change on forests

The effects of climate change on forests vary from region to region. In Atlantic Canada, for example, drought may become more frequent and severe as a result of lower rainfall in summer and higher temperatures. Hemlock and spruce trees can be affected since they are much more sensitive to drought than those with deep root systems. In Quebec, a longer growing season is already visible, as sugar maple and white spruce are budding earlier. While a longer season might seem positive to industry, gains may be cancelled out by the emergence of invasive species and more frequent and severe droughts and wildfires. In 2003, the wildfires in British Columbia and Alberta cost an estimated \$700 million in financial loss, caused three deaths, and required the evacuation of approximately 45,000 people.

In British Columbia, warmer summers and milder winters have helped the mountain pine beetle to thrive, contributing to the largest outbreak of the insect in history and enormous consequences for the forest industry. Warmer temperatures may enable a northward shift of the infestation to the pine forests of Yukon and the Northwest Territories and an eastward shift across the continent through the boreal forest. The current and projected infestation will kill enough trees to cause greater exposure of soils to precipitation, thereby increasing the risks of flooding.

Source: Adapted from Natural Resources Canada report From Impacts to Adaptation: Canada in a Changing Climate 2007

- 3.6 Health Canada prepared a second key report, Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity. This report is an in-depth assessment of the current and anticipated health effects of a changing climate and Canada's ability to adapt. It concluded that climate change poses risks to the health of Canadians through impacts associated with food, air, water, infectious diseases, and exposure to extreme weather such as heat waves. For example, changing climate conditions can influence the transmission of West Nile virus and Lyme disease from mosquitoes and ticks to people. According to the Health Canada report, over 1,800 cases of West Nile virus were reported in Canada between 2002 and 2005, with 46 of those resulting in death.
- 3.7 Both the Natural Resources Canada and Health Canada assessments indicated that the health of Canadians and Canada's natural environment, communities, and economy are vulnerable to the impacts of a changing climate, some of which are already occurring. Impacts are most evident in Canada's North where, for example, thawing permafrost is affecting the stability of roads, buildings, pipelines, and other infrastructure as a result of temperature increases. The government has noted that communities in the North, particularly Aboriginal communities, are among the most vulnerable. These and other government reports also illustrate how climate change affects a wide range of sectors, which touch on virtually all federal portfolios. These concerns have significant implications for the policies and



Erosion of permafrost that undercut a road Photo: Natural Resources Canada

programs of departments, particularly those related to Canadians' health and the country's industry, infrastructure, and ecosystems.

Findings from past audits

3.8 The federal government's activities with respect to climate impacts and adaptation were examined in the 2006 Report of the Commissioner of the Environment and Sustainable Development, Chapter 2, Adapting to the Impacts of Climate Change. In the report, the Commissioner concluded that the government had made limited progress in collecting the information needed to identify potential impacts and address vulnerabilities, and in ensuring that those who will most need to adapt can obtain appropriate information to help them do so. The Commissioner also concluded that federal departments had made only limited progress in assessing the potential impacts of climate change and how these impacts might affect their policies and programs.

Focus of the audit

- **3.9** The objectives of this audit were to determine whether selected entities have put in place adequate risk management processes and measures to address climate impacts, and to determine whether selected entities have shared information on climate impacts and adaptation in a manner that responds to the needs of users.
- **3.10** Under the objective of managing climate risks, we examined the following five departments:
 - Environment Canada, which has responsibilities in areas such as environmental protection, weather services, fresh water, wildlife, and terrestrial ecosystems;
 - Natural Resources Canada, which has responsibilities in areas that include monitoring permafrost and glaciers, and carrying out forest research;
 - Health Canada, which is responsible for helping Canadians maintain and improve their health;
 - Indian and Northern Affairs Canada, whose mandate is to support the well-being and economic prosperity of Aboriginal peoples and Northerners; and
 - Fisheries and Oceans Canada, which is responsible for maintaining safe and accessible waterways, healthy and productive aquatic ecosystems, and sustainable fisheries and aquaculture.

- **3.11** Under the objective on sharing information on climate impacts and adaptation, we examined the following four programs:
 - The Atmospheric Change Adaptation Strategies Program of Environment Canada
 - The Climate Change Geoscience Program of Natural Resources Canada
 - The Climate Change Adaptation Program of Indian and Northern Affairs Canada
 - The Pilot Heat Alert and Response Systems Program of Health Canada

These programs do not constitute the complete set of government initiatives that address climate impacts and adaptation.

3.12 The audit covered the period from 2006 to June 2010. More details about the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Managing climate risks

3.13 The impacts of climate change can affect the government's activities and assets. The 1994 Risk Management Policy of the Treasury Board requires that federal departments identify the potential threats, influencing factors, and types of risks to which their assets, program activities, and interests are exposed. Departments are required to assess the risks and implement cost-effective measures to control them. An important part of this process is to rank the major risks identified in terms of their priority and determine what must be done to address them. Treasury Board's 2001 Integrated Risk Management Framework provides further guidance to departments on identifying and assessing significant risks associated with policies, plans, programs, and operations, and on implementing appropriate measures to control them.

Departments have identified and assessed climate risks

3.14 For each of the five departments, we examined corporate, sectoral, and other risk management documents and processes to determine whether they had identified, assessed, and prioritized climate change risks associated with their mandates or areas of responsibility. Exhibit 3.4 lists examples of climate change risks that

selected departments have identified. We also looked at whether managers had access to tools, guidance, and training to help them incorporate climate change risks in their ongoing work.

3.15 Assessing risks and setting priorities. We found that Fisheries and Oceans Canada, Natural Resources Canada, Health Canada, and Environment Canada had completed assessments of the risks that climate change poses to their mandate areas and prioritized the risks

Exhibit 3.4 Examples of climate change risks selected departments have identified

Department	Risks		
Environment Canada	 Changes to biodiversity, including species at risk and the health and viability of protected areas. 		
	Increase in severe weather events, requiring timely and accurate warnings to the public.		
	Changes in the extent of sea ice resulting in new risks, like oil spills, for sea transport activities.		
Fisheries and Oceans Canada	 Lower water levels in the Great Lakes and St. Lawrence River, which create risks to navigation and shipping. 		
	 Habitat changes that alter fish stocks and affect the viability of commercial, recreational, and subsistence fisheries and aquaculture. 		
	 Sea-level rise in the Atlantic region, which requires adjustments to infrastructure such as wharves and small craft harbours. 		
Health Canada	 Heat-related illnesses and deaths as well as respiratory and cardiovascular disorders from more frequent and severe heat waves. 		
	 Contamination of food and water from heavy rainfall or changes in marine environments that result in higher levels of toxins in fish. 		
	Risks to traditional livelihoods, and to food and water security, in northern Aboriginal communities.		
Indian and Northern Affairs Canada	Effects of changing species migration and distribution on food supply for Aboriginal communities.		
	Damage to housing and other infrastructure in the North from permafrost melt and sea-level rise.		
	Changed hunting conditions in the North, with health and safety implications due to unpredictable sea ice.		
Natural Resources	Increase in the frequency and severity of insect outbreaks		



Wharf destroyed by ice pile-up from a storm surge in southeast New Brunswick

Photo: Environment Canada

Canada

(for example, the mountain pine beetle) and forest fires.

management and reclamation for Northern mines.

Complications in energy supply and demand.Effects of permafrost degradation on waste

accordingly. In 2005, Fisheries and Oceans Canada completed a departmental climate change risk assessment that covered risks to aquatic ecosystem management, the safety and accessibility of waterways, and fisheries management (Exhibit 3.5). The Department had also concluded that the impacts of climate change were of strategic importance and had included them in its corporate risk profile. In 2010, Natural Resources Canada completed a detailed analysis that assessed its sensitivity to a changing climate. The analysis found that all of its participating sectors recognized that a changing climate presents risks to its activities, associated long-term outcomes, and broader policy goals. The analysis ranked the identified climaterelated risks by level of severity, and it also determined that a changing climate will directly influence 6 of the 13 risks identified in the Department's 2008-09 corporate risk profile. Health Canada had also thoroughly assessed the risks that a changing climate presents for human health. Its report entitled Human Health in a Changing Climate served as a foundational study, and the risks that report identified were considered at the corporate level through Health Canada's medium- to long-term policy agenda. Environment Canada approached its climate risk assessment in a manner distinct from the other departments. The Department's Priority Ecosystem Initiative Management Framework has included threats and pressures due to climate change as one of 14 factors used to identify priority ecosystems and hot spots for intervention. The results have been considered in developing new proposals for action in the priority areas.

- 3.16 Indian and Northern Affairs Canada also began to apply a similar approach to that of Fisheries and Oceans Canada and Natural Resources Canada with respect to the systematic, department-wide assessment of the risks of climate change. However, at the time of our audit, this assessment work was not complete and risks had not been prioritized.
- 3.17 Developing internal tools, guidance, and training. Among the departments we examined, Natural Resources Canada and Fisheries and Oceans Canada have recently developed tools, guidance, and training to help managers in diverse program areas identify and assess the risks flowing from a changing climate. For example, Natural Resources Canada has developed a tool to help its managers identify, prioritize, and respond to the climate change risks and opportunities that are relevant to the activities, programs, and policies for which they are responsible. The tool also enables them to determine where programs and policies need to be adjusted to manage climate-related risks. The Department's Risk Management Centre of Expertise as well

as its Task Team on Climate Change Impacts and Adaptation provide training and materials to encourage managers to consider climate sensitivities when assessing the overall risks facing their programs and activities. Given that the impacts of climate change and the need to adapt to them touch on virtually all government portfolios, other federal departments and agencies would benefit from access to these best practices, tools, and guidance.

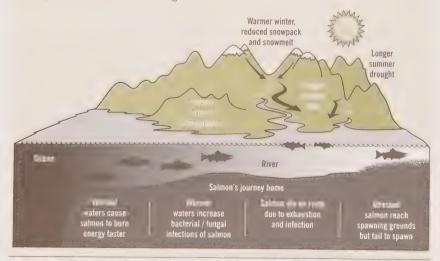
Exhibit 3.5 Understanding the risks of a changing climate on sockeye salmon

For Fisheries and Oceans Canada to uphold its mandate for the protection and sustainable use of fisheries resources and habitat, it needs to understand the impacts of climate change and consider them when developing its programs, policies, and research. For example, the Department's research shows that the Fraser River sockeye salmon face risks from a changing climate in both the marine and freshwater environments.

Salmon live part of their lives in freshwater before migrating to the ocean. Warming ocean temperatures can decrease the sockeye's survival rate because of, for example, the acidification of the ocean, reduced oxygen content in coastal waters, changes in food supply, and loss of habitat. Inland, a changing climate is leading to warmer winters with less snow and warmer river temperatures. Warmer waters cause more fish to die en route to spawning grounds. The salmon that do reach spawning grounds are stressed and often fail to spawn. In the summer of 2009, water temperatures in the Fraser River rose to above 20 degrees—a temperature that can be fatal to sockeye.

British Columbia's commercial and recreational salmon fisheries generate hundreds of millions of dollars a year for the Canadian economy and support thousands of jobs. However, since the 1990s salmon stocks have declined. The Fraser River sockeye has been hit especially hard. In 2009, the total return of the Fraser River sockeye was the lowest in over 50 years.

In stark contrast to the years of steady decline, the total estimated return of sockeye in 2010 was the highest in almost a century. The Department recognizes that climate change is expected to increase such variability while decreasing its ability to predict sockeye returns before the fishing season.



Source for image: Adapted from Fisheries and Oceans Canada

3.18 Recommendation. Environment Canada, as the lead on horizontal adaptation policy, should engage other departments to coordinate the dissemination of best practices and tools to improve how the government integrates climate-risk identification, assessment, and adaptation into its decision making and planning.

Environment Canada's response. Agreed. While individual departments continue to develop adaptation tools and best practices according to their primary areas of expertise, Environment Canada will assume the role of coordinator in the sharing of these tools and best practices across the federal government and will establish an interdepartmental committee before the end of this fiscal year.

Adaptation to climate impacts has been piecemeal

- 3.19 For each of the five departments, we examined whether departments had adjusted existing policies and plans or created new ones for adapting or responding to the risks associated with climate change. We also examined whether key programming areas had considered climate impacts and the need to adapt.
- 3.20 We found limited examples where policies and plans were adjusted or created to address risks arising from climate change. For example, climate change was taken into consideration in the development of Fisheries and Oceans Canada's 2005 Wild Salmon Policy and 2007 Ecosystem Science Framework, and science to support adaptation was made a priority of the Department's 2007–2012 research agenda. Risks and opportunities resulting from a changing climate have also been taken into consideration in Environment Canada's 2007 Science Plan.
- 3.21 Health Canada has identified key areas of vulnerability, which include, for example, health impacts related to conditions in the North, extreme weather (including extreme heat), air pollution, and infectious disease. In collaboration with other departments and agencies responsible for these issues, Health Canada has developed specific programs to address key risk areas. These programs involve
 - supporting climate change and health adaptation research in northern Inuit communities;
 - developing and testing heat alert and response systems;
 - developing and testing infectious disease alert and response systems (implemented by the Public Health Agency of Canada); and
 - developing an air quality and health index (implemented jointly with Environment Canada).

However, the funding for each of these programs is coming to an end in March 2011. Although some minimal capacity will remain for Health Canada to disseminate publications and other results of its programs, there is no indication from the Department or the government whether the adaptation work will continue. Other risk areas the Department identified have not led to new programming or adjustments of policies or strategies, including risks to water quality and quantity, as well as food security for northern communities.

- **3.22** At the program level, some initiatives whose core objectives do not target climate change nevertheless are at risk from a changing climate. However, adaptation to these risks has not become part of planning and decision making for those initiatives. We found only limited cases in which departments had taken climate adaptation into consideration at the program level.
- 3.23 Indian and Northern Affairs Canada has considered the impacts of climate change on its program to clean up contaminated sites in the North. A protocol used in the contaminated sites program specifically requires consideration of the implications that a changing climate has for the spread of contaminants to a wider area due to thawing permafrost. In contrast, climate change impacts have not been taken into consideration in other activities of the Department such as oil and gas management; land claims and treaties; or housing, water, and wastewater infrastructure in communities. Although Fisheries and Oceans Canada, Natural Resources Canada, Health Canada, and Environment Canada have done research on climate impacts affecting their mandate areas, they could provide little evidence of concrete adaptation measures that they have implemented at the program level in response to the identified risks.
- **3.24** Until departments adapt their policies and practices based on good risk assessments, they remain unprepared for the impacts of a changing climate; adaptation efforts could be more costly and less effective; and departmental mandates to protect ecosystems, infrastructure, communities, or the health of Canadians may go unfulfilled.
- **3.25** Recommendation. Environment Canada, Natural Resources Canada, Health Canada, Fisheries and Oceans Canada, and Indian and Northern Affairs Canada should identify the adaptation measures necessary to respond to the risks that climate change presents for their areas of responsibility.

Environment Canada's response. Agreed. Environment Canada has conducted a thorough and systematic assessment of ecosystem health across Canada, including risks associated with a changing climate.

Knowledge about ecosystem health derived from this assessment will including adaptation measures, will, beginning in 2010, be identified national programs, as well as through proposals to undertake new or

The Department will also continue to provide science-based information on Canada's changing climate and future impacts to inform and manage risks, through climate change prediction and

In addition to these actions, Environment Canada is also developing in occurrence and severity of severe weather events that can affect their health, safety, livelihood, and property. These initiatives will be designed to both improve the overall provision of information as well as to include improvements to services for areas of heightened risk such as heat episodes, water management (floods, droughts), and expected increases in poor air quality episodes.

Natural Resources Canada's response. Agreed. The Climate Change Sensitivity Assessment conducted in 2009 and 2010 provided Natural adaptation measures to mitigate climate-related risks faced by the Department in its areas of responsibility. Within the next year, the Department will review its existing adaptation measures and identify new ones that would be deemed necessary to manage its climaterelated risks in the context of its Risk Management Framework. The Department will also monitor these risks on a regular basis to make

Health Canada's response. Agreed. In 2008, Health Canada undertook an extensive process to identify the scope and magnitude of the Changing Climate: An Assessment of Vulnerabilities and Adaptive implemented programs to address the key priority areas identified in the report (weather extremes—extreme heat events; spread of infectious and vector borne diseases; climate change impacts on northern and Inuit

14

Health Canada will continue to support measures to address the health impacts of climate change, such as heat alert and response systems and air quality and health indices. The Department will continue to provide science-based advice on best practices, such that products can be taken up and applied by communities, researchers, and planners to inform and manage potential health risks related to climate change. Finally, in an effort to advance the understanding of the impacts of climate change, and to increase adaptive capacity in the health sector, the Department will continue to engage stakeholders, partners, and decision makers across Canada.

Health Canada will identify adaptation strategies that may be appropriate in program areas for which Health Canada is responsible.

Fisheries and Oceans Canada's response. Agreed. Climate change continues to be a priority for Fisheries and Oceans Canada, which conducted a Climate Change Risk Assessment in 2005. The Department has since incorporated climate change into its corporate risk profile and is working to create an internal policy framework for climate change adaptation.

In 2009, the international scientific community acknowledged that the role of the oceans in the broad climate change picture is very important. The Department has made it a priority to better understand the oceanic and aquatic elements of the climate system through research and monitoring. For this reason, the Department is actively pursuing avenues toward filling knowledge gaps with regard to the oceans aspects of climate change as a foundation for effective adaptation measures, both internally and interdepartmentally.

The Department is at a distinct disadvantage with respect to identifying the adaptation measures needed to respond to the risks that climate change presents. The Department has not received incremental climate adaptation funding; however, it has reallocated funds to begin this work. The Department is attempting to secure a resource base to move the program forward to keep pace with other departments. Significant action to identify adaptation measures for the Department's mandate (for example, managing the fisheries, the civil Canadian Coast Guard fleet, aquaculture, and Small Craft Harbours) will be required.

Indian and Northern Affairs Canada's response. Agreed. Indian and Northern Affairs Canada has initiated a Climate Change Vulnerability Assessment that will look at the impacts of climate change on departmental programs and policies, and enable the consideration of

climate change impacts in future planning for departmental policies, programs, and operations. The Department expects to complete the assessment in fiscal year 2010–11. Once vulnerabilities are assessed and validated, the Department will integrate climate change considerations into the corporate risk profile update process and the program renewal and management cycle. The Department is committed to implementing program measures to address priority impact areas. It will continue to build on partnerships with Aboriginal communities, organizations, and governments to build capacity at the local level to manage impacts from climate change and better inform the Department's efforts to address climate change impacts on their areas of responsibility.





Attempting to adapt to sea-level rise by armouring the shore

Photo: Environment Canada

- 3.26 Most climate impacts and adaptive actions occur at the regional and local levels. For example, the expectation that sea levels will rise in the future poses an increased risk of damage to the infrastructure, residences, ecosystems, and economies of coastal communities. Through its programs, the government has roles and responsibilities for helping Canadians reduce their exposure to risks from climate change. These responsibilities include providing information to a range of clients, stakeholders, and partners such as other federal departments, provincial and territorial governments, municipalities, Aboriginal communities, professional associations, academics, and international bodies.
- 3.27 The government is well positioned to provide information about climate impacts and adaptation, because it plays a lead role in carrying out research on climate change and measures to adapt to its impacts. The government is also positioned to facilitate coordination and collaboration among governments, economic sectors, organizations, and communities.
- 3.28 We examined whether selected federal programs that address adaptation to climate impacts had processes and methods in place to identify key users of information, to assess the users' needs for this information, and to make that information accessible and understandable.
- **3.29** We selected the following programs for examination:
 - The Atmospheric Change Adaptation Strategies Program of Environment Canada
 - The Climate Change Adaptation Program of Indian and Northern Affairs Canada

- The Climate Change Geoscience Program of Natural Resources Canada
- The Pilot Heat Alert and Response Systems Program of Health Canada

Clean Air Agenda—A \$1.9 billion federal government initiative from 2007–2011 to fund over 40 federal programs to reduce greenhouse gas emissions and air pollutants. Out of this total funding amount, \$85.9 million was allocated to six programs to help Canadians increase their capacity to adapt to a changing climate.

Exhibit 3.6 provides the objectives of these four programs. Except for the Climate Change Geoscience Program, the climate impacts and adaptation programs that we examined received funding under the Clean Air Agenda. At the conclusion of our examination, the continuation of programs funded under the Clean Air Agenda after 31 March 2011 was uncertain. The government has not yet announced its intentions about these programs.

Exhibit 3.6 Objectives of the four programs we examined that provide information on climate impacts and adaptation

Atmospheric Change Adaptation Strategies Program (Environment Canada)

Objective: To develop and implement, with partners, adaptive strategies to address the impacts of climate change for the benefit of Canadians and the environment. The program includes all activities of the Adaptation and Impacts Research Section of Environment Canada, as well as contributions from regionally based scientists of the Meteorological Service of Canada.

Climate Change Adaptation Program (Indian and Northern Affairs Canada)

Objective: To provide funding and support for projects that assist Aboriginal and northern communities and organizations in addressing the impacts of a changing climate through partnerships that include these communities and organizations along with other partners such as federal departments and territorial governments. Climate change-related impacts, such as storm surges and coastal flooding, are a concern for emergency management, food security, infrastructure, land use and community planning, and traditional ways of life.

Climate Change Geoscience Program (Natural Resources Canada)

Objective: To apply geoscience and geomatics expertise to help Canadians understand, prepare for, and adapt to the impacts of a changing climate on their communities, infrastructure, and ways of life. The program is managed by the Earth Sciences Sector of Natural Resources Canada. Activities, notably in northern communities, include monitoring of permafrost, sea-level rise, and coastal erosion, as well as digital mapping of watersheds, vegetation, and climate change scenarios.

Pilot Heat Alert and Response Systems Program (Health Canada)

Objective: To develop information and capacity to address urgent risks to human health from extreme heat. The program aims to deliver four main results:

- · a community best practices guide for extreme heat;
- extreme heat guidelines for health care workers;
- functioning pilot systems for heat alert and response in Fredericton, Windsor, Winnipeg, and the Assiniboine Regional Health Authority; and
- · a national heat forum.

Needs for information about climate impacts and adaptation have been assessed

- 3.30 The Communications Policy of the Government of Canada (2006) states that the government has an obligation to consult and communicate with citizens. The government needs to learn as much as possible about public needs and expectations in order to respond to them effectively. We examined whether mechanisms were in place for identifying the key clients, stakeholders, and partners who use the programs' climate impacts and adaptation information and whether those users' needs were taken into consideration. By understanding what type of information is needed and by whom, the programs that provide it are more likely to be effective in delivering the right information to the right groups and individuals.
- 3.31 We found that each of the four programs had formal and informal mechanisms to identify their key clients, stakeholders, and partners and to assess their information needs on an ongoing basis. These mechanisms included advisory bodies, stakeholder workshops and conferences, and lessons learned and contacts gained through other programs. For example, Indian and Northern Affairs Canada's Climate Change Adaptation Program was built on a previous program in which the needs of Aboriginal and northern communities for information about the impacts of climate change were identified and assessed at workshops across the country. These assessments provided a basis for developing the current adaptation program.

Mechanisms are in place to help users access and understand information

- 3.32 The departments whose programs we examined each have mandates to collect and provide information to Canadians relating to the environment, natural resources, the economy, or health. We examined whether the four programs have mechanisms to allow ready access to understandable information on climate impacts and adaptation. In addition, the Communications Policy of the Government of Canada requires that government institutions facilitate public access to their publications and that published information must be available on request in multiple formats to ensure equal access. We therefore also looked at whether dissemination of the government's two key reports on climate impacts and adaptation in 2008 adhered to this policy.
- 3.33 Sharing information. The programs that we examined used a variety of approaches to provide access to information. These included websites, publications, fact sheets, newsletters, and stakeholder workshops and conferences. Another important means of providing information was to bring together key decision makers, stakeholders,

and specialists to exchange information and perspectives and deliberate cooperatively on specific issues. For example, for a project in Clyde River, Nunavut, supported by Indian and Northern Affairs Canada and Natural Resources Canada, scientists presented project findings concerning sea-level rise, coastal erosion, watershed impacts, and thawing permafrost to the community, using plain language and in both English and Inuktitut. Similarly, Health Canada engaged key local partners and experts to share information and experience to develop heat alert and response systems in their communities.

- 3.34 Low profile release of two climate change vulnerability assessments. In 2008, the government produced two major national-scale assessments of vulnerabilities, impacts, and adaptation options for a changing climate. From Impacts to Adaptation: Canada in a Changing Climate 2007 was led by Natural Resources Canada, and Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity was led by Health Canada. From Impacts to Adaptation is the most comprehensive assessment of risks from a changing climate for Canadian ecosystems and the communities and economic sectors that depend on them. It was developed over four years and involved 18 lead authors and 145 contributors. Health Canada considers Human Health in a Changing Climate to be the most significant assessment of climate impacts on the health of Canadians. The assessment involved work over four years by 10 steering committee members, 16 lead authors, 31 contributors, 39 reviewers, and more than 350 participants.
- 3.35 In the case of the human health vulnerability assessment, we found that Health Canada had initial plans for a high-profile release, but the final communication strategy provided for only a low-profile one. For example, public presentations of the assessment's key findings were scheduled, then cancelled. Despite the significance of the assessment, neither the full technical report nor the summary that was completed at the same time has been made available for download on Health Canada's website. A news release on the assessment was published, but it focused on topics other than the subject of the assessment. In the years following the assessment's initial release, Health Canada has taken steps to raise awareness of its key findings—for example, by making presentations to targeted audiences at conferences and workshops.
- **3.36** We also found that while a detailed initial communications strategy was prepared for the assessment led by Natural Resources Canada, its release was also limited. For example, no news release was issued to inform Canadians about the risks the Department assessed.

However, in contrast to Health Canada, Natural Resources Canada made its assessment available on its website.

- 3.37 Although the risks to Canadians and Canada's ecosystems outlined in these assessments are severe and touch upon almost all aspects of our society, the government failed to take simple steps that would raise Canadians' awareness and understanding of the risks. The dissemination of these vulnerability assessments was inconsistent with the Communications Policy of the Government of Canada to facilitate Canadians' access to these publications.
- 3.38 Making information understandable. The programs that we examined had facilitated understanding of their information by clients, stakeholders, and partners using various means. Scientific and technical information had been provided in plain language. Visual displays such as maps and satellite imagery had also been used as a key method of conveying information in a way that is meaningful for decision makers and stakeholders. In-person, often one-on-one assistance or presentations had also been used to interpret complex information in a way that could be acted upon by users. Exhibit 3.7 describes the approach to presenting information on adaptation to climate change that was used in a project in Clyde River, Nunavut.
- 3.39 In the field of climate impacts and adaptation, decision making is affected in part by limitations of the available data, including the confidence that can be placed in projections about the future. We found that programs that provided quantitative information about current and future trends in climate impacts—namely the Climate Change Geoscience Program at Natural Resources Canada, the Atmospheric Change Adaptation Strategies Program at Environment Canada, and Health Canada's Pilot Heat Alert and Response Systems Program—included measures to help users interpret this information. They had explained the assumptions and limitations associated with the information and provided tools for minimizing the influence of uncertainties on decisions to be made. In these ways, the programs increased the usefulness of their information for a wide range of clients, stakeholders, and partners.

Mechanisms are in place to assure users of the quality of the information

3.40 Individuals and organizations making adaptation decisions today—with consequences that may extend up to several decades in the future—need access to reliable information to support their adaptation planning and actions. Because Natural Resources Canada

and Environment Canada provide significant quantitative climate data, we assessed whether their programs had mechanisms in place to provide assurance about the quality of the information being shared. However, we did not audit the quality of the information itself.

3.41 We found that both programs are subject to internal and external quality management requirements, which provide assurance to clients, partners, and stakeholders about the quality of information being shared. Both departments have in place formal procedures to guide the preparation and review of publications produced internally by the programs we audited. Submissions to external publications, such as scholarly journals or international reports, are also subject to peer review and other quality management processes of the external body.

Exhibit 3.7 Helping communities in Nunavut adapt to climate change

In Nunavut, impacts from a changing climate, such as thawing permafrost and rising sea levels, cause damage to housing and other infrastructure and increase the risk of flooding and erosion. Located on the eastern coast of Baffin Island, Clyde River is one of many northern coastal communities vulnerable to these impacts.

In 2006, a multidisciplinary partnership was formed to help communities in Nunavut adapt. In Clyde River, Natural Resources Canada, Indian and Northern Affairs Canada, the Canadian Institute of Planners, and the Government of Nunavut's Department of Environment and Department of Community and



Thawing of permafrost causes uneven shifting of building's foundation

Photo: Natural Resources Canada

Government Services worked with community leaders and organizations to assess the impacts of climate change on the community and to develop an adaptation plan. Scientists with Natural Resources Canada focused their assessments on sea-level rise, coastal erosion, watershed impacts, and permafrost melt.

In the Clyde River project, Natural Resources Canada scientists regularly consulted and provided information to community members and organizations. They used a variety of formats to communicate their findings, including community workshops, presentations, and gatherings. Community members and partners indicated that it would be essential to communicate information visually in order to better facilitate understanding. Therefore, scientists also presented information in visual formats such as maps generated from satellite and aerial imaging, graphs, and posters. Findings were also communicated in both English and Inuktitut, and scientists worked closely with local organizations and community members to build capacity within the community to generate and use the information required for adaptation decision making.

Resilience—The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the same capacity for selfstress and change.

Adaptive capacity—The whole of capabilities,



Tree damage caused by a storm, Stanley Park, Vancouver, December 2006 Photo: Environment Canada

3.42 Climate observations are used to develop models of the climate and the ocean, and these models in turn are used to develop scenarios of what future conditions may be for specific regions, areas, organizations, or communities. Climate scenarios can then be used as a basis for assessments of how vulnerable an organization, a community, or an economic sector may be to the risks posed by a changing climate. Such assessments provide important information to Canadians that can help them increase their resilience and adaptive capacity.

3.43 The Atmospheric Change Adaptation Strategies Program develops scenarios using data and models obtained from other sections of Environment Canada and external parties. It has taken measures to assure itself of the quality of the data that it uses to develop scenarios and other analyses of climate change impacts. Program staff routinely check the quality of the data used and share information internally about important contexts for properly understanding specific data sets. They also have initiated a project to improve the quality of historical climate data by comparing it to closely related data from other sources. Examples include historical data about wind damage in forests and insurance claims for severe weather events. Environment Canada has also helped its clients and partners to reduce uncertainties as they develop their own scenarios. It has provided a tool allowing users to assess the different outputs of various international models in order to identify the models that best suit their specific location of interest.

3.44 However, the products of the Atmospheric Change Adaptation Strategies Program are inherently limited by shortcomings in the network of stations that monitor weather and climate in Canada. One significant example of these shortcomings is the insufficient density of monitoring stations, particularly in Canada's North. The limitations of the monitoring network make it difficult to develop scenarios and analyze extreme weather events at the local and regional levels where adaptive action is taken. The Meteorological Service of Canada, which is responsible for the monitoring network, is aware of this issue and is exploring strategies to address it.

A federal adaptation strategy and action plan

3.45 In our examination of departments' efforts to manage climate risks and share information on impacts and adaptation, we noted that the government has not established clear priorities for addressing adaptation to a changing climate, and therefore, the need remains for a federal strategy and action plan.

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Ice storm damage in Montréal, Quebec, January 1998

Photo: Environment Canada

There is still no federal strategy and action plan for adaptation

- 3.46 Over the last two decades, scientific reports and international agreements have recognized that the impacts from a changing climate pose serious risks, to which the health of Canadians and Canada's natural environment, communities, and economy are vulnerable (Exhibit 3.2). In 2007, the government established the four-year Clean Air Agenda with \$1.9 billion in funding. Most of this funding was directed to programs to reduce greenhouse gas emissions, while \$85.9 million (about 4.5 percent of the total) was committed over four years to six programs intended to assist Canadians in adapting to climate change. Three of the four programs that we examined in this audit received funding from the Clean Air Agenda.
- 3.47 The government has acknowledged that, at current funding levels, the programs we examined do not have the capacity to address the scale, magnitude, and long-term effort required to respond to the impacts of climate change in Canada. The government has also recognized that demand from organizations, governments, and others for climate impacts and adaptation information is currently increasing. In this context, the gap between demand for information and federal capacity to provide it is likely to widen.
- 3.48 Funding for the Clean Air Agenda is scheduled to end in March 2011. There is uncertainty about whether the programs under the Agenda will be renewed, extended, or expanded. This lack of certainty about the continuation of these programs—in addition to the lack of a strategy in place to provide direction on priorities—hinders the government's efforts to advance adaptation to climate change in Canada. In the case of the Climate Change Adaptation Program, Indian and Northern Affairs Canada found that community partners would probably stop work on their adaptation planning if existing program support were to cease. Similarly, partners in Health Canada's Pilot Heat Alert and Response Systems Program have expressed concerns that, without continued funding, the program's achievements in the four pilot communities will not be built upon or expanded to other communities across the country.
- 3.49 When we consulted clients, partners, and staff involved with Environment Canada's Atmospheric Change Adaptation Strategies Program, they expressed concern that the Department might reduce the capacity of its regional offices, which provide help in accessing, understanding, and applying information (Exhibit 3.8). Without such support, communities and organizations may make poor decisions about how to adapt to a changing climate.

3.50 A strategy and an action plan are needed to address uncertainties and shortfalls in the government's capacity to work on adapting to the impacts of climate change. In the Commissioner of the Environment and Sustainable Development's 2006 audit of adaptation, we recommended that the government develop and implement a federal adaptation

Exhibit 3.8 Adapting to sea-level rise in New Brunswick

In 2003, Environment Canada and Natural Resources Canada began a collaborative project to assess potential impacts of sea-level rise on the southeastern coast of New Brunswick. Other key partners in the project were Parks Canada, Fisheries and Oceans Canada, the Province of New Brunswick, academic researchers, and communities within the study area. Public interest in the project was heightened by major sea storm surges in 2000 and 2004, which caused extensive damage to residences and infrastructure and required the intervention of emergency response groups.

The project report, published in 2006, compared the impacts of the January 2000 storm with the potential impacts of that same event if the sea level had been 60 centimetres higher, as was projected for the year 2100. Municipal and provincial governments could use the report to identify areas and assets that would be at risk in such scenarios, and to take adaptive measures such as elevating building sites, retreating from the shoreline, and developing emergency plans. Findings from the study were disseminated through media coverage, a project website, and presentations to the public and to target audiences, such as the provincial government. A key means of making the information accessible and useful was for Environment Canada staff to work one-on-one with specific community and local government officials to help them understand and apply the information.

The government received requests to do similar work in other areas of the region, but a lack of clear higher-level direction and scarce resources have limited the ability of government representatives to engage. Many clients, stakeholders, and regional staff of Environment Canada and Natural Resources Canada are concerned that the federal government may not be able to meet this growing regional demand for climate impacts and adaptation information.



In January 2000, a storm surge flooded residences and infrastructure in the community of Pointe-du-Chêne, New Brunswick.



Area of flooding if the January 2000 storm surge were to occur after sea level rose by 60 cm, as was projected for the year 2100.

Flooded areas

Water

Maps: Adapted from Environment Canada

strategy. This strategy would explain the government's role with respect to climate change adaptation and define its priorities. The strategy would indicate how the government intended to work with other levels of government and stakeholders (exhibits 3.7 and 3.8), and what it would contribute to collectively advance climate change adaptation in Canada. It would also include an assessment of the implications of a changing climate for federal policies and priorities.

In 2007, the government directed Environment Canada and Natural Resources Canada to prepare, by December 2008, an adaptation framework explaining the government's role with respect to adaptation and assisting it in establishing priorities. Since 2007, interdepartmental consultations on the development of an adaptation framework have taken place. However, to date no framework, strategy, or action plan has been completed on adaptation, nor has a plan to adapt to the impacts of climate change been incorporated into any other broader environment and sustainable development policies or strategies, such as the Federal Sustainable Development Strategy. We also found that the departments mandated for consultation on the framework are limited to those that received funding under the Adaptation theme of the Clean Air Agenda. Other departments that have mandates related to climate risks, such as Fisheries and Oceans Canada and Agriculture and Agri-Food Canada, have had limited involvement in the process.

- **3.52** Department officials confirm that they need an overall strategy to provide direction in their efforts on adaptation. Having a federal adaptation strategy is critical because it could
 - outline the government's overall priorities, objectives, and goals with respect to adaptation;
 - provide direction on incorporating adaptation into policy making and operational planning;
 - provide direction to departments to prioritize and coordinate their adaptation efforts;
 - communicate to external parties what support they can expect from the government;
 - identify research that meets the needs of the government and its clients, partners, and stakeholders; and
 - address capacity and growing demand for information on climate impacts and adaptation.

In addition, a federal adaptation strategy would allow the government to determine which climate adaptation needs, of those identified by the government's departments, partners, and clients, it wants to pursue in the medium to long term and what programs will be necessary to achieve them.

3.53 Recommendation. Building on the government's 2007 commitment to develop an adaptation policy framework, Environment Canada, with support from Natural Resources Canada and other departments and agencies, should develop a federal adaptation strategy and action plan.

Environment Canada's response. Agreed. Environment Canada will work closely with other federal partners to develop an adaptation policy framework that will guide future adaptation programming efforts. The framework will set out a vision for adaptation, objectives, definition of the federal role, and a set of criteria for identifying federal priorities.

Conclusion

- 3.54 Through our examination of departments' efforts to manage climate risks and share information on impacts and adaptation, what emerged from both areas of examination is that there is still no federal adaptation policy, strategy, or action plan in place. Departments therefore lack the necessary central direction for prioritizing and coordinating their efforts to develop more effective and efficient ways of managing climate change risks.
- 3.55 Overall, the departments we examined have not taken concrete actions to adapt to the impacts of a changing climate. With few exceptions, they have yet to adjust or develop policies and practices to better respond to the risks. However, Fisheries and Oceans Canada, Natural Resources Canada, Health Canada, and Environment Canada have taken the first steps of risk management by completing assessments of the risks to their mandate areas from climate change, and they have prioritized the risks. Indian and Northern Affairs Canada has initiated but not yet completed a department-wide assessment of the climate change risks it must manage.

3.56 The four programs we examined have shared information on climate impacts and adaptation in a manner that responds to the needs of their specific clients, stakeholders, and partners. This includes having mechanisms in place to assess user needs, to make information accessible and understandable, and, where relevant, to provide assurance of the quality of the information being shared. However, the programs cannot meet the increasing demand for information. Funding for adaptation programs under the Clean Air Agenda is scheduled to end in March 2011, and there is no plan in place to address ongoing needs after that date.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objectives

Our overall audit objective was to determine whether selected entities have mechanisms in place to share information and manage risk to support adaptation to the impacts of a changing climate. Our audit work included two sub-objectives:

- to determine whether selected entities have put in place adequate risk management processes and measures to address climate impacts; and
- to determine whether selected entities have shared information on climate impacts and adaptation in a manner that responds to the needs of users.

Scope and approach

The federal role. Canada ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, and under that Framework, Canada ratified the Kyoto Protocol in 2002. Both the Framework and the Protocol commit signatories to take action on climate change adaptation, and the government has taken on roles and responsibilities for adaptation. Our audit focused on two of the federal government's key roles: one, as an adaptor, whereby departments and agencies are responsible for minimizing the risks of climate change impacts on their own policies, programs, operations, and activities; and two, as a facilitator of adaptation by others, specifically by conducting research and disseminating information on climate change impacts and options for adaptation.

Selection of entities. The following entities were selected for examination in the audit:

- · Environment Canada
- Natural Resources Canada
- · Health Canada
- · Indian and Northern Affairs Canada
- · Fisheries and Oceans Canada

These departments were selected because the government has indicated that their mandates include areas most at risk from a changing climate—the North, human health, fisheries, forestry, and ecosystems. These departments also have programs related to the collection and dissemination of information on climate impacts and adaptation. Some of them have programs that have received short-term funding under the Adaptation theme of the four-year Clean Air Agenda, while others have longer term programs on impacts and adaptation that were in place before the Clean Air Agenda was developed. One of the longer term

programs also received additional funding under the Clean Air Agenda. The programs we selected for examination do not constitute the complete set of government initiatives that address climate impacts and adaptation.

During our audit, we conducted interviews with departmental officials and reviewed files and documents. We also met with individuals and groups outside the federal government who provided us with perspectives on users' needs for information on climate impacts and adaptation. They included officials with provincial, territorial, and municipal governments; Aboriginal organizations; academics; researchers; and industry associations. We also visited three different regions of Canada to examine federal involvement in understanding the climate risks affecting specific areas and the adaptation measures being developed. This work included visits to

- Clyde River and Iqaluit in Nunavut, to observe how Natural Resources Canada and Indian and Northern Affairs Canada had assisted Aboriginal communities to adapt to climate impacts in Canada's North;
- Southeastern New Brunswick, to understand the roles of Environment Canada and Natural Resources Canada in developing information to help coastal communities understand and adapt to risks from rising sea levels; and
- British Columbia, to understand the role of Fisheries and Oceans Canada in addressing climate change risks that affect the salmon fishery.

We also examined whether the selected programs had mechanisms in place to ensure the quality of the information being shared. We did not, however, audit the quality of the information itself or the adequacy of the programs' application of the mechanisms. We also did not examine the government's activities related to facilitating adaptation in other countries.

Criteria

To determine whether selected entities have put in place adequate risk management processes and measures to address climate impacts, we used the following criteria:				
Criteria	Sources			
The selected entities identify and assess climate risks and, where appropriate, implement control measures (adaptation	Risk Management Policy (Policy Requirements 1 and 2, and Appendix B), Treasury Board, 1994			
measures).	 Integrated Risk Management Framework (Introduction section, Integrated Risk Management section, and A Commo Process section), Treasury Board, 2001 			

To determine whether selected entities have shared information on climate impacts and adaptation in a manner that responds to the needs of users, we used the following criteria:

Criteria	Sources	
For selected climate impacts and adaptation information programs, the selected entities identify users and take their needs into consideration.	 Department of the Environment Act, section 5(a)(iii) Department of Natural Resources Act, section 6(i) Department of Indian Affairs and Northern Development Act, section 5(c) Department of Health Act, sections 4.2(c) and 4.2(h) Communications Policy of the Government of Canada (Policy Statement, bullet 6), Treasury Board, 2006 	
	Management Accountability Framework, Areas of Management, Round VI (Citizen-Focused Service element, line of evidence 20.2), Treasury Board of Canada Secretariat, 2008	
For the selected programs, the selected entities have mechanisms in place to share information with users that	United Nations Framework Convention on Climate Change, 1992, article 4(1)(h)	
include facilitating access to and interpretation of information on climate impacts and adaptation.	Communications Policy of the Government of Canada, Treasury Board, 2006	
	Statistics Canada Quality Assurance Framework, page 3, Statistics Canada, 2002	

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period from 2006 to June 2010. Audit work for this chapter was substantially completed on 8 June 2010.

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 3. The number in front of the recommendation indicates the paragraph number where it appears in the Chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation

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Managing climate risks

3.18 Environment Canada, as the lead on horizontal adaptation policy, should engage other departments to coordinate the dissemination of best practices and tools to improve how the government integrates climate-risk identification, assessment, and adaptation into its decision making and planning. (3.13–3.17)

3.25 Environment Canada, Natural Resources Canada, Health Canada, Fisheries and Oceans Canada, and Indian and Northern Affairs Canada should identify the adaptation measures necessary to respond to the risks that climate change presents for their areas of responsibility. (3.19–3.24)

Response

Environment Canada's response. Agreed. While individual departments continue to develop adaptation tools and best practices according to their primary areas of expertise, Environment Canada will assume the role of coordinator in the sharing of these tools and best practices across the federal government and will establish an interdepartmental committee before the end of this fiscal year.

Environment Canada's response. Agreed. Environment Canada has conducted a thorough and systematic assessment of ecosystem health across Canada, including risks associated with a changing climate. Knowledge about ecosystem health derived from this assessment will support decision making for Environment Canada's interventions in vulnerable ecosystems. Targeted responses to ecosystem health risks, including adaptation measures, will, beginning in 2010, be identified through the departmental planning process and actioned through national programs, as well as through proposals to undertake new or renewed ecosystem initiatives in concert with federal, provincial, and territorial partners.

The Department will also continue to provide science-based information on Canada's changing climate and future impacts to inform and manage risks, through climate change prediction and scenarios development.

In addition to these actions, Environment Canada is also developing initiatives to improve warnings to Canadians about expected increases in occurrence and severity of severe weather events that can affect their health, safety, livelihood, and property. These initiatives will be designed to both improve the overall provision of information as well as to include improvement to services for areas of heightened risk such as heat episodes, water management (floods, droughts), and expected increases in poor air quality episodes.

Recommendation

Response

Natural Resources Canada's response. Agreed. The Climate Change Sensitivity Assessment conducted in 2009 and 2010 provided Natural Resources Canada with a good basis to help identify appropriate adaptation measures to mitigate climate-related risks faced by the Department in its areas of responsibility. Within the next year, the Department will review its existing adaptation measures and identify new ones that would be deemed necessary to manage its climate-related risks in the context of its Risk Management Framework. The Department will also monitor these risks on a regular basis to make sure corresponding adaptation measures remain appropriate.

Health Canada's response. Agreed. In 2008, Health Canada undertook an extensive process to identify the scope and magnitude of the potential health effects of climate change in Canada related to air quality, infectious diseases, and natural hazards. These effects, and Canada's capacity to respond, were detailed in the report Human Health in a Changing Climate: An Assessment of Vulnerabilities and Adaptive Capacity. Health Canada and the Public Health Agency of Canada then implemented programs to address the key priority areas identified in the report (weather extremes—extreme heat events; spread of infectious and vector borne diseases; climate change impacts on northern and Inuit communities; and air pollution).

Health Canada will continue to support measures to address the health impacts of climate change, such as heat alert and response systems and air quality and health indices. The Department will continue to provide science-based advice on best practices, such that products can be taken up and applied by communities, researchers, and planners to inform and manage potential health risks related to climate change. Finally, in an effort to advance the understanding of the impacts of climate change, and to increase adaptive capacity in the health sector, the Department will continue to engage stakeholders, partners, and decision makers across Canada.

Health Canada will identify adaptation strategies that may be appropriate in program areas for which Health Canada is responsible. **Recommendation** Response

Fisheries and Oceans Canada's response. Agreed. Climate change continues to be a priority for Fisheries and Oceans Canada, which conducted a Climate Change Risk Assessment in 2005. The Department has since incorporated climate change into its corporate risk profile and is working to create an internal policy framework for climate change adaptation.

In 2009, the international scientific community acknowledged that the role of the oceans in the broad climate change picture is very important. The Department has made it a priority to better understand the oceanic and aquatic elements of the climate system through research and monitoring. For this reason, the Department is actively pursuing avenues toward filling knowledge gaps with regard to the oceans aspects of climate change as a foundation for effective adaptation measures, both internally and interdepartmentally.

The Department is at a distinct disadvantage with respect to identifying the adaptation measures needed to respond to the risks that climate change presents. The Department has not received incremental climate adaptation funding; however, it has reallocated funds to begin this work. The Department is attempting to secure a resource base to move the program forward to keep pace with other departments. Significant action to identify adaptation measures for the Department's mandate (for example, managing the fisheries, the civil Canadian Coast Guard fleet, aquaculture, and Small Craft Harbours) will be required.

Indian and Northern Affairs Canada's response. Agreed. Indian and Northern Affairs Canada has initiated a Climate Change Vulnerability Assessment that will look at the impacts of climate change on departmental programs and policies, and enable the consideration of climate change impacts in future planning for departmental policies, programs, and operations. The Department expects to complete the assessment in fiscal year 2010-11. Once vulnerabilities are assessed and validated, the Department will integrate climate change considerations into the corporate risk profile update process and the program renewal and management cycle. The Department is committed to implementing program measures to address priority impact areas. It will continue to build on partnerships with Aboriginal communities, organizations, and governments to build capacity at the local level to manage impacts from climate change and better inform the Department's efforts to address climate change impacts on their areas of responsibility.

Recommendation

Response

A federal adaptation strategy and action plan

3.53 Building on the government's 2007 commitment to develop an adaptation policy framework, Environment Canada, with support from Natural Resources Canada and other departments and agencies, should develop a federal adaptation strategy and action plan. (3.45–3.52)

Environment Canada's response. Agreed. Environment Canada will work closely with other federal partners to develop an adaptation policy framework that will guide future adaptation programming efforts. The framework will set out a vision for adaptation, objectives, definition of the federal role, and a set of criteria for identifying federal priorities.

Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—Fall 2010

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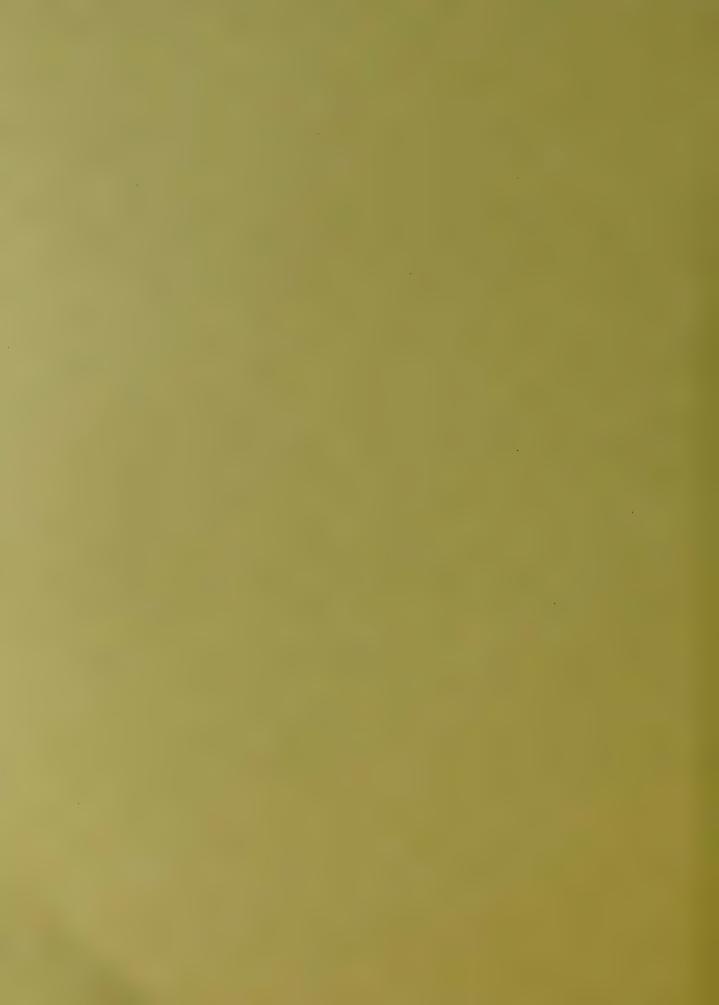
Chapter 3 Adapting to Climate Impacts

Chapter 4 Environmental Petitions









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2010



Report of the
Commissioner of the
Environment and
Sustainable Development
to the House of Commons

FALL

Chapter 4
Environmental Petitions



Office of the Auditor General of Canada





FALL

Report of the

Commissioner of the Environment and Sustainable Development

to the House of Commons

Chapter 4

Environmental Petitions



The Fall 2010 Report of the Commissioner of the Environment and Sustainable Development comprises The Commissioner's Perspective, Main Points—Chapters 1 to 3, an appendix, and four chapters. The main table of contents for the Report is found at the end of this publication.



The Report is available on our website at www.oag-bvg.gc.ca.

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Chapter

4

Environmental Petitions

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Introduction

The environmental petitions process

- 4.1 The environmental petitions process was created in 1995, through an amendment to the *Auditor General Act*. It is a formal, yet simple, way for Canadians to obtain responses from federal ministers to their questions, concerns, and requests on environmental issues that are within the federal government's mandate. Twenty-seven departments and agencies are currently subject to the process.
- 4.2 Any Canadian resident can submit an environmental petition, acting alone or acting on behalf of an organization, business, or municipality. Since the first petition was submitted in late 1996, more than 350 petitions have been submitted. Topics have varied widely, from the impact of a development on a local stream to the right of all Canadians to a healthy environment. Petitioners have used the petitions process to ask for information, investigations, specific actions, and policy changes.
- 4.3 The responsible federal ministers must provide a written reply to a petition within 120 calendar days. Ministers are required to notify the petitioner before the end of this period if they do not expect to be able to meet the timeline. This is clearly spelled out in the Act, which requires that ministers respond to each petition. While this means that ministers must answer the petitioner's questions in a timely manner, it does not mean that ministers or departments are required to take action on the issues raised. However, the Act does not restrict departments from taking action.
- 4.4 Information on the process and the role of the Commissioner of the Environment and Sustainable Development, who administers the process on behalf of the Auditor General of Canada, is summarized in Exhibit 4.1.
- 4.5 In early 2009, the Office released Getting Answers—A Guide to the Environmental Petitions Process, to describe the process in more detail. The guide includes
 - · what kinds of requests that can be made,
 - how to write and submit an environmental petition,
 - what the role of the Commissioner is, and
 - what petitioners can expect from departments and agencies.

Getting Answers—A Guide to the Environmental Petitions Process is available on the Office of the Auditor General website (www.oag-bvg.gc.ca).

Focus of the report

- 4.6 The purpose of this annual report is to report to Parliament and Canadians on the number, nature, and status of petitions and responses received between 1 July 2009 and 30 June 2010, as is required by section 23 of the Auditor General Act. The report also highlights good practices and opportunities for improvement.
- 4.7 More details on our work can be found in **About the Chapter**.

	Environmental petitions process				
Starting a petition	A Canadian resident submits a written petition to the Auditor General of Canada.				
Reviewing a petition	The Commissioner reviews the petition to determine if it meets the requirements of the <i>Auditor General Act</i> .				
	If the petition meets the requirements of the Auditor General Act, the Commissioner will determine the federal departments and agencies responsible for the issues addressed in the petition; send the petition to the responsible ministers; and send a letter to the petitioner, listing the ministers to whom the petition was sent.	of the Auditor General Act, the petitioner was be informed in writing. If the petition is incomplete or unclear, the petitioner will be asked to re-submit it.			
Responding to a petition	the petition; and	rust er and the Commissioner acknowledging receipt of petitioner and Commissioner within 120 days.			

Ongoing petitions activities					
Monitoring	Reporting	Posting on the Internet	Auditing		
The Commissioner monitors acknowledgement letters and responses from ministers.	The Commissioner reports to the House of Commons on the petitions and responses received.	The Commissioner posts petitions, responses, and summary information on the Internet, in both official languages.	The Office of the Auditor General considers issues raised in petitions when planning future audits.		

Source: Adapted from the Auditor General Act and Getting Answers: A Guide to the Environmental Petitions Process

Petitions and Responses

Petitions received

- 4.8 During this year's reporting period (1 July 2009 to 30 June 2010), we received 18 petitions, compared with 28 last year and 56 the year before. As we reported last year, the record number in the 2007–08 reporting year was unusual, because over half of the petitions were grouped around a few specific topics, such as fluoride in drinking water and exposure to electromagnetic radiation. The total for the 2008–09 reporting year also included multiple petitions related to electromagnetic radiation issues, but that was not the case this year.
- 4.9 When we speak with members of the public, we are frequently told that most Canadians, who may wish to raise environmental concerns with the federal government, are unaware of the process. We made a similar observation in our October 2007 retrospective and annual report chapter. We believe that it is important to continue to raise awareness of this important tool, which gives Canadians an opportunity to discuss environmental issues with their federal government. We will continue to examine a range of cost-effective tools to broaden public awareness of the process, including using social media and other outreach efforts.
- **4.10** Petitions were submitted by petitioners residing in six provinces (Exhibit 4.2), with half of the petitions originating in Ontario (nine petitions). Residents of Quebec submitted four petitions, and Nova Scotia residents submitted two.
- **4.11** An overview of petitions activity during our reporting period, including petition summaries, is in the Appendix. With the consent of the petitioners, and only after they have been tabled in Parliament, petitions and responses are posted in our petitions catalogue, on the Office of the Auditor General website.

A substantial proportion of petitions were submitted by individuals and past petitioners

4.12 Twelve (two thirds) of the eighteen petitions submitted this year were submitted by individuals, rather than by organizations; this proportion is similar to that of previous years. The remaining six petitions were submitted by small groups and environmental organizations. Past petitioners submitted nine petitions, half of this year's total; three of the nine were follow-up petitions.

Exhibit 4.2 Petitions came from six provinces (1 July 2009 to 30 June 2010)



Petition No.	Subject
221E	Follow-up petition on health and environmental concerns regarding the fluoridation of drinking water
240C	Follow-up petition on environmental concerns regarding the Cacouna marsh
269B	Follow-up petition on environmental concerns related to proposed expansion of the Marmot Basin ski area in Jasper National Park, Alberta
287	Potential environmental and public health impact of a federally funded municipal sewage project in L'Îsle-Verte, Quebec
288	Concerns about actions taken against a doctor for statements made about cancer rates in Fort Chipewyan, Alberta
289	Health Canada's adherence to the precautionary principle
290	Federal government progress related to the conservation and recovery of wild Atlantic salmon in eastern Canada
291	The Government of Canada's vision and measures for reducing atmospheric carbon emissions
292	The management of salmon and other fisheries on the west coast of Canada

Source: I	Petitions	submitted	to	the	Auditor	General	of	Canada
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Petition No.	Subject
293	Implementation status of the marine protected areas aspects of the federal government's Health of the Oceans initiatives
294	The health impact of chemicals and pollutants that are released into the environment
295	The potential health and environmental impact of pesticides on apples and other food crops
296	The potential health and environmental impact of using sewage sludge on agricultural land
297	Federal government's management of the impact of pesticides and toxic chemicals on the health of Canadians
298	A proposed hybrid wind/hydro-power development in Cape Breton, Nova Scotia
299	The regulation and approval of fluoridation products added to drinking water
300	The environmental impact of salmon aquaculture in Passamaquoddy Bay, New Brunswick
301	Alleged misinterpretation of exclusion list conditions under the <i>Canadian Environmental Assessment Act</i> related to the construction of a communications tower in Pontiac, Quebec

The issues most commonly raised by petitioners related to health, toxic substances, fisheries, and water

- **4.13** There continues to be a diversity of topics. A small number of the petitions received this year dealt with the same topics; we received four petitions about Canada's fisheries.
- **4.14** The following three petitions raised issues related to specific fisheries:
 - Petition 290 asked Fisheries and Oceans Canada to explain its progress in managing salmon conservation and recovery in Eastern Canada.
 - Petition 292 called for Fisheries and Oceans Canada to carry out targeted scientific investigations to evaluate the status of fish populations on the West Coast of Canada.
 - Petition 300 asked Fisheries and Oceans Canada and other departments about the environmental impact of intensive salmon aquaculture in New Brunswick on fish habitat and fisheries. In addition, due to proximity of the aquaculture to the United States, the petition raised potential international treaty implications.
- **4.15** Petition 293 (the fourth petition about fisheries) raised broader ocean management issues. The federal government was asked about the implementation of its Health of the Oceans initiatives (announced in 2007) that related to marine protected areas. This petition also asked about the status of integrated management plans for a number of oceans regions, including fisheries management plans.
- Two other petitions, one new and one follow-up, were about the health and environmental impact of fluoridation products being added to drinking water. Petition 299 asked Health Canada how it ensures that fluoridation products that are added to drinking water comply with federal food and drug standards, and Petition 221E is a follow-up petition on the health and environmental impact of adding fluoride to drinking water.
- 4.17 When petitions are received, we analyze them to identify the broad issue categories that apply to them. These categories are included in our petitions catalogue to help users with their searches.

- 4.18 This year, the most frequently raised issue continues to be the impact of environmental issues on health, followed by issues related to toxic substances, fisheries, and water. Because environmental issues tend to be interrelated and can have an impact on a number of areas, more than one issue category is normally identified for each petition. Some petitions focus on the potential impact of environmental issues on health, for example, fluoride in drinking water. Others identify the impact on health as a consequence of another environmental issue, for example, toxic substances that may exist in sewage sludge (biosolids) applied to agriculture fields (Petition 296).
- 4.19 Among petitions that deal with different topics and issues, there are some common themes. The Office's audit work is informed not only by specific petition topics but also by these kinds of common themes. One such theme—the adequacy and objectivity of the science used in policy-making and standard-setting—was again apparent in a number of this year's petitions, for example, in petitions about climate change policy, the health impact of pollutants, and in the fluoridation of drinking water.
- **4.20** Other themes this year included gaps and overlaps in the way federal and provincial jurisdictions deal with environmental issues, and transparency and openness related to access to important information, studies, and reports.

There was a fairly even split between local and national issues

- 4.21 This year, petitions were fairly evenly split between those that focused on local, regional, or case-specific issues and those that dealt with national or broad-based issues. Petitions may also contain a mix of local and national issues. For example:
 - Petition 301 asked the federal government specific questions about the exemption from environmental assessment for the proposed construction of a communications tower in Pontiac, Quebec. While locally focused, the petition also raised broader questions about the interpretation of federal environmental assessment legislation.
 - Petition 300 asked about the impact of intensive salmon aquaculture in Passamaquoddy Bay, New Brunswick. This region is situated in close proximity to the United States, and the petition raises questions related to international treaties as well as local concerns.

The petitions guide is designed to help petitioners produce concise petitions

- **4.22** As they did last year, department representatives told us they face challenges in determining petitioners' concerns when the background information and questions are long and unfocused. Petition length does not necessarily correlate with the importance of the issue, the knowledge of the petitioners, or the length or detail of the response. Clarity and factual accuracy are more important than length.
- **4.23** . We continue to encourage petitioners to submit concise petitions. In our petitions guide (Getting Answers—A Guide to the Environmental Petitions Process), we suggest a maximum of 5,000 words and a maximum of 20 questions or requests. We also state that, if those limits are exceeded, the Office reserves the right to not publish petitions on its website. All petitions received this year met these guidelines, averaging 2,000 words and 10 questions.

Responses received

- 4.24 This year, responses were due on a total of 30 petitions. Since departments have 120 days to respond after a petition is received, some of the responses covered in this report were for petitions received in the previous reporting period. This is why there is the difference in the number of submitted petitions (18) and the number of petitions for which responses were due (30). Responses for petitions received toward the end of this reporting period will be included in next year's report.
- 4.25 Also, since most petitions were directed to more than one department or agency, a total of 84 responses were provided by 16 departments and agencies. Environment Canada typically receives the most petitions; this year it responded to 23 of the 30 petitions. Health Canada received the second most petitions; it responded to 16 petitions.

The percentage of on-time responses improved significantly

- 4.26 There has been a significant improvement in the number of on-time responses this year, after two years of decline. This year,93 percent of responses were provided on time, compared with77 percent last year and 86 percent the year before.
- 4.27 Despite the fact that Environment Canada and Health Canada were responsible for the largest number of responses (23 and 16 respectively), all of their responses were on time. Fisheries and Oceans Canada and Agriculture and Agri-Food Canada were responsible for nine and six responses, respectively, and they also delivered all of their responses on time.

- 4.28 This year, five departments responded late to at least one petition, including the Treasury Board of Canada Secretariat, which responded late to the two petitions that it was responsible for (Exhibit 4.3).
- 4.29 On average, late responses were submitted 9 days after the 120-day deadline—a significant improvement from last year's 35-day average. The number of days late ranged from 1 to 20. While Public Works and Government Services Canada was late responding to the only petition it was responsible for this year, it missed the deadline by only one day.
- 4.30 Departments and agencies have a legislative obligation to respond within the 120-day period. However, if the responsible minister sends a written notification, within this period, that the response will be delayed, the response is not deemed late. This year, one notification was sent (related to petition 281).

Exhibit 4.3 Five departments responded late to at least one petition

Department or Agency	Number of responses due	Number of late responses	Percentage on time (%)	Notifications of delay*
Agriculture and Agri-Food Canada	6	0	100	0
Canada Economic Development for Quebec Regions	1	0	100	0
Environment Canada	23	0	100	0
Finance Canada	. 3	1	67	0
Fisheries and Oceans Canada	9	0	100	1
Foreign Affairs and International Trade Canada	3	0	100	0
Health Canada	16	0	100	0
Indian and Northern Affairs Canada	3	0	100	0
Industry Canada	1	0	100	0
Justice Canada, Department of	2	0	100	0
Natural Resources Canada	3	1	67	
Parks Canada	3	0	100	0
Public Health Agency of Canada	4	0	100	0
Public Works and Government Services Canada	1	1	0	0
Transport Canada	4	1	75	0
Treasury Board of Canada Secretariat	2	2	0	0
Totals	84	6	93	1

^{*}Note: A response is not considered to be late if the petitioner is notified of an expected delay before the due date.

Responses were generally complete and relevant

4.31 This year, petitioners asked almost 200 questions using the petitions process. These questions, and the answers they receive, vary considerably in length and level of detail. The examples of questions and responses in Exhibit 4.4 illustrate the kinds of exchanges that result from the petitions process.

Exhibit 4.4 Petitioners' questions and the answers they receive vary considerably in length and level of detail

Question	Response
Petition 279, Question 1. Do PWGSC [Public Works and Government Services Canada] and other relevant government departments have policies in place to limit the use of lighting in federal government offices to specific office hours or other periods when offices are actually in use? If so, what are these policies? How are these	Public Works and Government Services Canada's response. Public Works and Government Services Canada (PWGSC) uses design standards, operating guidelines and best practices to optimize the use of lighting in federal government offices by limiting the use of lighting as much as possible. These standards, guidelines, [and] practices govern the use of lighting in Crown-owned office facilities and are designed to take into account the diverse tenants and the varied operations these tenants conduct within Crown-owned facilities across Canada. Further, they are based on legal and other responsibilities that the Crown must discharge.
policies administered, managed, and monitored?	PWGSC provides accommodation to federal departments and agencies, many of which have specific operational requirements beyond the standard hours of operation. For example, certain departments have secure facilities, data centres, and buildings with multiple shifts that require extended lighting hours. Some departments provide services to taxpayers in six Canadian time zones, while others have a requirement to communicate with staff abroad. Therefore, the lighting hours in each building are based on the operational requirement of the client department.
	In addition, minimum lighting levels are specified by the Canada Labour Code Part II and the National Building Code, supported by the National Fire Code. These codes dictate that emergency/egress lighting be provided in all buildings in Canada, both for security and in the event that the building must be vacated in an emergency. To meet this requirement, PWGSC has been directed by Human Resources and Skills Development Canada to provide continuous lighting with lower light level requirements, connected to emergency lighting circuits. For this reason, some lights are always left on in Crown-owned buildings.
	PWGSC is continuously adopting industry best practices in reducing energy consumed by lighting, for example,
	using motion detector-triggered lighting in boardrooms, common areas, and in low traffic areas;
	 harvesting perimeter daylight that allows for perimeter office lighting to be turned off when natural daylight provides sufficient lighting;
	reducing light levels by retro-fitting fluorescent lighting and controls;
	piloting personalized lighting controls in individual work spaces; and
	 upgrading lighting controls to enable occupants to turn on lighting when they enter office spaces each morning, to replace lighting controls that are activated automatically.
	PWGSC continues to monitor and introduce ongoing advances in new lighting technology as it becomes commercially available. Moreover any newly constructed office buildings must meet the energy efficient lighting standards set by the Institute

(Continued on next page)

Petitioners' questions and the answers they receive vary considerably in length and level of detail (continued)

Question	Response
	of Electrical and Electronics Engineers and be LEED [Leadership in Energy and Environmental Design] Gold Certified. PWGSC is continually looking for new opportunities for energy savings, including from building lighting, and exploits emerging technologies that will reduce off-hour lighting requirements to a minimum whenever feasible. PWGSC energy experts have reviewed the electrical demand curve for the Department of National Defence Headquarters, presented as figure two in your letter to the Commissioner of the Environment and Sustainable Development. Their review of the past ten months has determined that the lighting control system is functioning properly. The review also concluded that there have been instances when the
Petition 285, Question 5. Challenging administrative decisions is an expensive, technically demanding and time consuming proposition. Will the Department of Justice [Canada] provide legal assistance such as intervener funding in circumstances of environmental NGO's [non-governmental organizations] launching judicial reviews of administrative decisions when they are acting in the public interest?	Department of Justice Canada's response. There is no federal government program to provide legal assistance to non-governmental organizations for initiating court challenges to administrative decisions of the Government.
Petition 291, Question 1. Does the Canadian government, including relevant government ministries, recognize current science that measures atmospheric carbon emissions to be approximately 400 parts per million, states that 350 parts per million is the safe upper limit for emissions, and urges the global community to reduce carbon emissions to 350 parts per million without delay? If the science is recognized, what measures is the Canadian government, including relevant government ministries, taking to ensure that carbon emissions fall to the safe upper limit? If the science is not recognized, upon which data is the Canadian government, including relevant government ministries, basing its decisions and actions?	Environment Canada's response. Emissions of carbon dioxide (from fossil fuel combustion, for example) are usually reported in units of grams or tonnes per unit time (e.g. gigatonnes of carbon dioxide per year). Atmospheric concentrations of carbon dioxide are measured in parts per million (ppm). Environment Canada can confirm that current atmospheric carbon dioxide concentrations are below 400 ppm. On November 23, 2009, the World Meteorological Organization reported that the globally averaged atmospheric carbon dioxide concentration for 2008 was 385.2 ppm, an increase of 2 ppm from 2007. The scientific community has not defined a single value for atmospheric carbon dioxide concentrations that is considered "safe," as this type of determination requires judgement based on societal values. The scientific community continues to investigate and report on the implications for society and the environment of different levels of atmospheric greenhouse gas concentrations and related climate change.
Petition 296, Question 9. Does the federal government support, in principle, that consumers have a right to adequate, fair and truthful information about food products so that they can make informed decisions about their purchases? If so, does the federal government have plans to label foods that result from the use of treated sewage waste?	Health Canada's response. Agricultural use of biosolids is managed at the provincia level. Health Canada is not directly involved in, and does not have authority over, the approval of biosolids for agricultural use. Based on the information currently available and reviewed by Health Canada scientists, there would be no health-driver rationale to support labelling of foods/crops that have been grown using biosolids derived from treated sewage waste.

The full text of the petitions and responses can be found in the petitions catalogue on the Office's website (www.oag-bvg.gc.ca).

- **4.32** As part of its monitoring role, the petitions team routinely reviews each petition response, including determining the potential relevance to planned audits. Our primary considerations when we review petition responses are as follows:
 - Completeness. Is every question addressed?
 - Relevance. Are the responses relevant to the questions?
- **4.33** We also look for clarity in responses. For example, if the responding department disagrees with information or views that are central to the petition, we look at whether its response includes a clear explanation of the basis for the disagreement. This is the type of observation we may raise with departments, when we meet periodically to discuss the petitions process.
- **4.34** Petition responses reflect the government's policy and program objectives and the responding departments' implementation and management of these objectives, which may not align with the views and positions of petitioners. Since we do not judge the quality of a response based on the departments' positions, our perspective on the adequacy of responses may differ from that of petitioners.
- **4.35** This year, as in past years, we found that the majority of responses were complete and relevant. Moreover, some petition responses included considerable depth and detail, for example, the responses to petitions 279, 292, and 293.
 - Response to Petition 279. The petitioner asked about the federal government's policies and actions regarding after-hours lighting of federal office buildings. In its response, Public Works and Government Services Canada explained why lights may remain on after normal hours and described many of its initiatives for greening building operations. As described in paragraph 4.45, this petition elicited media interest.
 - Response to Petition 292. The petitioner asked the federal government about the management of salmon and other fisheries on the West Coast of Canada. In its 24-page response, Fisheries and Oceans Canada provided a relatively detailed description of its policies and actions regarding the West Coast fisheries. It also provided a reasonably clear explanation of provincial jurisdiction and its overlap with federal mandates in the areas of watershed and fisheries management.
 - Response to Petition 293. The petitioner asked the federal government to describe the implementation status of its Health of

the Oceans initiatives. The petition was concisely written and included five questions that were directed to a number of departments, including Fisheries and Oceans Canada, Environment Canada, and Parks Canada. Fisheries and Oceans Canada provided a joint response to the petition for the three entities. The response included detailed information, such as financial data and implementation timelines. The other two departments, Transport Canada and Indian and Northern Affairs Canada, replied that they did not have primary responsibility for the specific questions in the petition and stated that the other departments would be better able to respond.

- 4.36 While departmental responses provided some depth and detail, petitioners stated, in their response to the petitions feedback survey (paragraphs 4.38 to 4.43), that they were dissatisfied with departmental responses. This dissatisfaction usually related to what they saw as a lack of action or commitment by the departments to deal with the issues that had been raised.
- 4.37 We found that Fisheries and Oceans Canada continued to provide petitioners with the names and phone numbers of departmental contacts in case the petitioners require additional information. This good practice demonstrates openness and transparency. We encourage other departments and agencies to adopt a similar approach. For example, we noted that Environment Canada also provided a contact name in its response to Petition 294; however, this did not appear to be a standard practice.

Feedback survey reveals petitioners' views about the quality of responses

- 4.38 In 2009, we implemented a feedback survey to determine petitioner views on departmental responses to petitions and on the petitions process itself. When we prepared this report, we had received 25 feedback survey responses (a response rate of one third). The responses can provide useful information, helping to identify strengths and areas of improvement for the petitions process.
- **4.39** Two thirds of the respondents indicated that they had previously contacted the federal government about the issue before they submitted their petition. In almost all of these cases, the petitioners were not satisfied with the outcome, and in a majority of those cases, this was their main motivation for using the petitions process.
- 4.40 Petitioners submit environmental petitions for different reasons. According to the feedback survey, the reason petitioners gave most

frequently for submitting petitions is to request action from the federal government (three quarters of all respondents). Other important reasons given were to obtain specific information and formal commitments, to get government to act more quickly, and to raise awareness of an environmental issue within the government as well as with the public. In our discussions with petitioners, we remind them that the process only requires departments to respond to the questions and requests in petitions; it does not require them to take action to deal with the issue.

- 4.41 With regard to the feedback survey question on satisfaction with the government's response to their petition, 20 of the 24 petitioners who responded indicated that they were dissatisfied. In addition, petitioners consistently rated the specific aspects of the government's response, such as taking action or making specific commitments, as poor. Several petitioners expressed their disappointment that, in their view, the petitions process does not include a mechanism to ensure that departments take action on issues or provide responses that meet petitioner expectations.
- 4.42 As a result, just over half of the petitioners who responded rated their experience with the petitions process as unsatisfactory. Nevertheless, the majority of them indicated that they would consider submitting another environmental petition.
- 4.43 The feedback survey also showed that petitioners were most likely to seek guidance on the structure and format of a petition and the kinds of questions and requests that can be made, as well as information about how the petitions process works. When they prepared their petitions, most petitioners sought guidance on the process from the Office's petitions team and made use of the petitions guide.

Petitions can have an impact on issues

- 4.44 Previous petitions chapters contained examples of actions that were prompted or accelerated by petitions; but, in most cases, there is no clear, direct cause-and-effect relationship between petitions and specific actions. However, petitions can contribute to the momentum of an issue by
 - raising awareness of the issue and about public concerns related to the issue.
 - prompting interdepartmental exchanges,
 - creating a clearer public record of the government's views and position on the issue,

- prompting further action by the petitioner, and
- · informing audit planning within the Office of the Auditor General.
- 4.45 Petitions often raise issues that are of broad public concern or that are emerging into public awareness. Some petitions of the past year have been covered in the news, including an online report that the Canadian Broadcasting Corporation (CBC) did in March 2010. The report included a discussion of lighting practices in federal office buildings (an issue that was raised in Petition 279, see paragraph 4.35). It specifically mentioned the petition, focusing on the issues it raised, and included interviews with the petitioner and the federal departments involved. In addition, an article printed in the Halifax Chronicle Herald, in January 2010, discussed the use of sewage sludge (biosolids) on farmland, the subject of Petition 296. The petitioner was interviewed for the article.

Conclusion

- 4.46 The petitions process remains a unique way for Canadians to present their environmental concerns to federal ministers. They can also use the process to obtain information and, in some cases, commitments to action.
- We received 18 petitions this year that covered a diversity of topics. There was a significant improvement in on-time responses this year, after two years of decline. This year, 93 percent of responses were provided on time, compared with 77 percent last year and 86 percent the year before. The two departments that responded to the most petitions, Environment Canada and Health Canada, both provided 100 percent of their responses on time this year.
- The quality of responses is the key to realizing the value of the environmental petitions process. While petitioners have a role to play—that is, submitting petitions that are clear, concise, and well researched—departments have a responsibility to provide complete and relevant responses.
- We will continue to work to promote good-quality petition responses. We will also continue to consider information from petitions and responses when we do our planning for audits and studies. These actions, among others, are designed to help petitions play their part in influencing federal management of environmental issues.

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About the Chapter

Objective

The objective of this chapter is to inform Parliament and Canadians about the use of the petitions process. In accordance with sections 22 and 23 of the *Auditor General Act*, the chapter describes the number, nature, and status of petitions received, and the timeliness of responses from ministers. The annual report on environmental petitions summarizes the monitoring of the petitions process by the Commissioner of the Environment and Sustainable Development within the Office of the Auditor General of Canada.

Period covered by the chapter

The annual report on environmental petitions covers the period from 1 July 2009 to 30 June 2010. The Appendix includes summaries of the petitions received during this reporting period. The work for this chapter was substantially completed on 15 July 2010.

Petitions team

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For information, please contact Communications at 613-995-3708 or 1-888-761-5953 (toll-free).

Appendix Petitions activity (1 July 2009 to 30 June 2010)

This appendix includes a summary of the petitions (follow-up and new issues) received during the activity period noted above. To access the full text of petitions and responses from December 1995 to 30 June 2010, go to the petitions catalogue on our website. If necessary, paper copies of the catalogue can be obtained on request.

Pention No. 221E. Follow-up polition on health and environmental concerns regarding the fluoridation of drinking water

Date received: 25 November 2009

Petitioner: Carole Clinch

Summary: In this follow-up petition, the petitioner is concerned about the suitability of Health Canada's review of studies in support of its "weight of evidence" assessment regarding artificial water fluoridation. The petitioner is also concerned about claims without citation in the Canadian Drinking Water Secretariat's recent review on water fluoridation, and questions the impartiality of the review panel. In addition, the petitioner requests that Health Canada formally correct an error in a previous petition response.

Issues: Human and environmental health, toxic substances, and water

Federal departments responsible for reply: Health Canada, Public Health Agency Canada

Status: Replies received but not yet posted

Follow No. 240C Follow-up petition on environmental concerns regarding the Cacouna marsh

Date received: 21 September 2009

Petitioner: Gérard Michaud

Summary: In this follow-up petition, the petitioner raises additional concerns related to activities in the Port of Gros-Cacouna, Quebec, and their impact on the conservation and protection of the nearby Cacouna marsh. The petitioner asks questions related to issues raised in his previous petitions and poses several others about future steps for environmental assessment and management of port activities, within the context of the basic principle of sustainable development as described in the federal government's Federal Sustainable Development Act. The petitioner also requests remedial action on some sediments exposed by dredging work.

Issues: Biological diversity, compliance and enforcement, environmental assessment, transport, and other Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada, Transport Canada

Status: Replies received but not yet posted

Polition No. 2098: Follow-up perition on environmental concerns related to the proposed expansion of the Marmot Basin Ski Area in Jasper National Park, Alberta

Date received: 26 August 2009

Petitioners: Jasper Environmental Association, Bow Valley Naturalists, and UTSB Research

Summary: In this follow-up petition, the petitioners expand on their assertion that removing already protected land from the Marmot Basin Ski Area leasehold to allow for the possibility of further development in the area does not constitute a substantial environmental gain. They are concerned that the proposed developments, as

well as potential summer use of the Marmot Basin, could adversely affect the land in question and the wilderness around it, including the three species-at-risk that are present in the area. In addition to questions related to these concerns, the petitioners once again ask the Minister of Environment to respond to two letters about the ski area that were signed by numerous conservation groups and that were sent to the previous Minister.

Issues: Biological diversity, environmental assessment, and other

Federal departments responsible for reply: Environment Canada, Parks Canada

Status: Replies received but not yet posted

Petition No. 287: Potential environmental and public health impact of a federally funded municipal sewage project in L'Isle-Verte, Quebec

Date received: 3 July 2009 Petitioner: Gaston Hervieux

Summary: The petitioner is concerned about the potential environmental and public health impact of a municipal sewage project in L'Isle-Verte, Quebec. He asks the federal government about measures identified in the environmental assessment, measures that are required by the federal funding program to mitigate the environmental impact in and around the Baie de L'Isle-Verte. He also questions several federal departments about the certification processes for the use of potentially contaminated sewage sludge on agricultural land.

Issues: Environmental assessment, fisheries, human and environmental health, waste management, and water

Federal departments responsible for reply: Agriculture and Agri-Food Canada, Canada Economic Development for Quebec Regions, Environment Canada, Fisheries and Oceans Canada, Foreign Affairs and International Trade Canada, Health Canada, Industry Canada

Status: Completed

Petition No. 288: Concerns about actions taken against a doctor for statements made about cancer rates in Fort Chipewyan, Alberta

Date received: 23 July 2009 Petitioner: Frank Woodcock

Summary: The petitioner alleges that Health Canada took disciplinary actions against a doctor for publicly raising concerns about cancer rates in Fort Chipewyan, Alberta, a community that is located downstream from oil sand extraction operations. The petitioner seeks information on the rationale for complaints filed against the doctor. The petitioner also asks questions about specific environmental contaminants at Fort Chipewyan and how conditions are being improved.

Issues: Governance, human and environmental health, toxic substances, and water

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada, Health Canada, Indian and Northern Affairs Canada

Status: Completed

Publican No. 289: Health Canada's authorough to the precautionary principle

Date received: 23 July 2009 Petitioner: Frank Woodcock

Summary: The petitioner alleges that Health Canada is not adhering to the precautionary principle. Claiming that Health Canada does not ban toxins and carcinogens until the United States or the European Union take action, the petitioner cites the recent ban on phthalates as an example. The petitioner also asks that Health

Canada ban triclosan.

Issues: Governance, human and environmental health, and toxic substances

Federal department responsible for reply: Health Canada

Status: Completed

Petition No. 220. Federal povernment progress related to the conservation and recovery of wild Atlantic salmon in eastern Canada

Date received: 25 August 2009

Petitioner: Atlantic Salmon Federation

Summary: The petitioner is concerned about the decline of wild Atlantic salmon in Eastern Canada. The petitioner asks about Fisheries and Oceans Canada's progress in managing salmon conservation and recovery in the following areas: fisheries management, habitat protection and restoration, and protection from the impact of aquaculture. The petitioner also asks about progress made against past recommendations of the Commissioner of the Environment and Sustainable Development.

Issues: Federal-provincial relations, fisheries, and governance

Federal department responsible for reply: Fisheries and Oceans Canada

Status: Completed

Publicon No. 201. The Covernment of Canada's vision and measures for reducing atmospheric carbon emissions

Date received: 3 November 2009

Petitioner: Andrew Urlocker

Summary: The petitioner is concerned about atmospheric carbon emissions that he alleges are higher than the safe upper limit suggested by current science. The petitioner raises questions about the Government of Canada's vision and measures to reduce carbon emissions and how these will frame Canadian discussions during the December 2009 Copenhagen climate change negotiations. The petitioner also asks the government what citizen engagement practices will be used for future policy development.

Issues: Climate change, governance, international cooperation, and science and technology

Federal departments responsible for reply: Department of Finance Canada, Environment Canada, Foreign Affairs and International Trade Canada, Natural Resources Canada

Status: Completed

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Petition No. 292: The management of salmon and other fisheries on the West Coast of Canada

Date received: 7 December 2009

Petitioner: Edward J. Beatty

Summary: The petitioner is concerned about the federal government's management of salmon and other fisheries on the West Coast of Canada. The petitioner believes that Fisheries and Oceans Canada needs to carry out targeted scientific investigations to evaluate the status of fish populations on the West Coast. He also asks the federal government about various practices that he claims have a detrimental effect on salmon and other fish species, such as the issuance of fish farm licences and the use of various netting practices.

Issues: Compliance and enforcement, federal-provincial relations, and fisheries

Federal department responsible for reply: Fisheries and Oceans Canada

Status: Reply received but not yet posted

Petition No. 293: Implementation status of the marion prolected areas aspects of the federal government's health of the Oceans initiatives

Date received: 8 January 2010 Petitioner: World Wildlife Fund

Summary: As part of its 2007 Budget, the Government of Canada committed funding to a series of initiatives to protect fragile marine environments, counter pollution, and strengthen preventive measures. The petitioner asks the responsible federal departments and agencies for information regarding the current status of the implementation of initiatives that deal with the establishment, management, and monitoring of marine protected areas. The petitioner also asks about the status of integrated management plans for a number of ocean regions.

Issues: Biological diversity, federal provincial relations, fisheries, and water

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada, Indian and Northern Affairs Canada, Parks Canada, Transport Canada

Status: Replies received but not yet posted

Petition No. 294: The health impact of chemicals and pollutants that are released into the environment

Date received: 20 January 2010
Petitioner: Frank Woodcock

Summary: The petitioner alleges that many chemicals and pollutants released into the environment are being detected in human umbilical cord blood. He cites a study that provided a list of these chemicals and the consequences each has on the human body. The petitioner asks the federal government what is being done to track chemicals and pollutants released into the environment, as well as those found in humans, and to assess their impact on health. He also asks whether the government has carried out related cost analysis of this impact.

Issues: Human and environmental health, pesticides, and toxic substances

Federal departments responsible for reply: Environment Canada, Health Canada

Status: Replies received but not yet posted

Petition No. 285: The potential health and environmental impact of pesticides on apples and other food crops

Date received: 20 January 2010
Petitioner: Frank Woodcock

Summary: The petitioner alleges that the nutritional value of fruits and vegetables has declined since the Second World War, requiring a larger quantity to obtain the same value. He is concerned about the amount of pesticides used on an equivalent "nutritional kilo" of apples and other food crops today and its potential impact on the environment and on health. He also asks the federal government about the environmental cost of transporting fruit and vegetables and whether Canada's Food Guide reflects the potential effects of pesticides on listed foods.

Issues: Agriculture, human and environmental health, pesticides, and toxic substances

Federal departments responsible for reply: Agriculture and Agri-Food Canada, Environment Canada, Health Canada

Status: Replies received but not yet posted

Polition No. 296: The potential health and environmental impact of using sewage sludge on agricultural land

Date received: 1 February 2010

Petitioner: Biosolids and Wastewater Caucus, Nova Scotia Environmental Network

Summary: The petitioner alleges that sewage sludge (biosolids) may contain substances that could have a negative impact on humans and the environment when such sludge is used as fertilizer on agricultural land. The petitioner is concerned about these substances leaching into adjacent natural water bodies, and asks the federal government how it is protecting rural environments and residents from potential harmful impact. In addition, the petitioner asks what the government's plans are for labelling foods treated with sewage waste, and whether biosolids are reported as part of the National Pollution Release Inventory.

Issues: Agriculture, federal-provincial relations, human and environmental health, toxic substances, and water Federal departments responsible for reply: Agriculture and Agri-Food Canada, Environment Canada, Health

Status: Replies received but not yet posted

Potition No. 287: Federal government's management of the impact of pesticides and toxic chemicals on the health of Canadians

Date received: 2 February 2010

Petitioner: Frank Woodcock

Summary: The petitioner is concerned that Health Canada is not taking a precautionary approach to protecting the health of Canadians given the many pesticides and toxic chemicals that he alleges are found in the environment and in our food. The petitioner asks Health Canada and other federal departments for information about the amount of pesticides and toxic chemicals in the environment and their impact on the health of Canadians.

Issues: Agriculture, air quality, governance, human and environmental health, pesticides, and toxic substances

Canada

Federal departments responsible for reply: Agriculture and Agri-Food Canada, Environment Canada, Health Canada

Status: Replies received but not yet posted

Petition No. 298: A proposed hybrid wind/hydro-power development in Cape Breton, Nova Scotia

Date received: 10 February 2010

Petitioners: Save the Grand River Watershed Association, and Mark Macneill

Summary: The petitioners are concerned about the potential adverse impact of a proposed hybrid wind/hydro-power project in the Lake Uist area of Cape Breton, Nova Scotia on fish and wildlife habitat, drinking water, recreation, and navigation. The project proposes to use wind turbines to pump water to an elevated reservoir and release it to power hydro turbines. The petitioners request information on federal legal and administrative requirements and actions regarding this project.

Issues: Compliance and enforcement, environmental assessment, federal-provincial relations, fisheries, and transport

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada, Transport Canada

Status: Replies received but not yet posted

Petition No. 299: The regulation and approval of fluoridation products added to drinking water

Date received: 19 May 2010

Petitioners: Pierre Jean Morin and Gilles Parent

Summary: The petitioners are concerned about the addition to drinking water of fluoridation products that they claim are not regulated or approved as drugs or natural products under federal law. They ask Health Canada to explain how it ensures that these products conform with federal food and drug standards. They also ask the Department to explain what the petitioners believe are contradictory statements about fluoridation products added to drinking water. In addition, they ask Health Canada and Justice Canada to provide examples of other anthropic chemicals with claimed health benefits that have been added to drinking water without regulatory approval or informed consent.

Issues: Compliance and enforcement, human and environmental health, and water

Federal departments responsible for reply: Health Canada, Department of Justice Canada

Status: Replies pending

Petition No. 300: The environmental impact of salmon aquaculture in Passamaquoddy Bay, New Brunswick

Date received: 3 June 2010

Petitioner: Joseph Gough

Summary: The petitioner is concerned about the environmental impact of intensive salmon aquaculture in the Passamaquoddy region of New Brunswick. The petitioner asks the federal government about the potential impact that this aquaculture may have on fish habitats and fisheries, as well as on other species. He also raises concerns about cross-border transmission of diseases and invasive species and about possible non-compliance with the Boundary Waters Treaty between Canada and the United States. In addition, he asks how the

aquaculture affects pollution levels as well as economic, environmental, and aesthetic values, and whether Fisheries and Oceans Canada is respecting the precautionary principle.

Issues: Biological diversity, compliance and enforcement, fisheries, human and environmental health, and international cooperation

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada, Foreign Affairs and International Trade Canada

Status: Replies pending

Puttlen No. 301. Alleged this interpretation of exclusion list conditions under the Canadian Environmental Association to the construction of a communications tower in Pontiac, Quebec

Date received: 30 June 2010 Petitioner: James Riordan

Summary: The petitioner is concerned about the construction of a communications tower in Pontiac, Quebec. The petitioner claims the tower has been excluded from an environmental assessment due to a misinterpretation of exclusion list conditions under the *Canadian Environmental Assessment Act*. The petitioner notes the proximity of the site to a nature reserve and its potential impact on migratory birds and on the stability of the soil. He asks the federal departments whether they will reconsider the exclusion decision. The petitioner asks the Minister of the Environment to clarify the exclusion list conditions under the Act. He also raises concerns about the potential health impacts caused by exposure to electromagnetic radiation.

Issues: Biological diversity, compliance and enforcement, environmental assessment, and human and environmental health

Federal departments responsible for reply: Environment Canada, Health Canada, Industry Canada Status: Replies pending

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